ENGINEERING NEWS-RECORD

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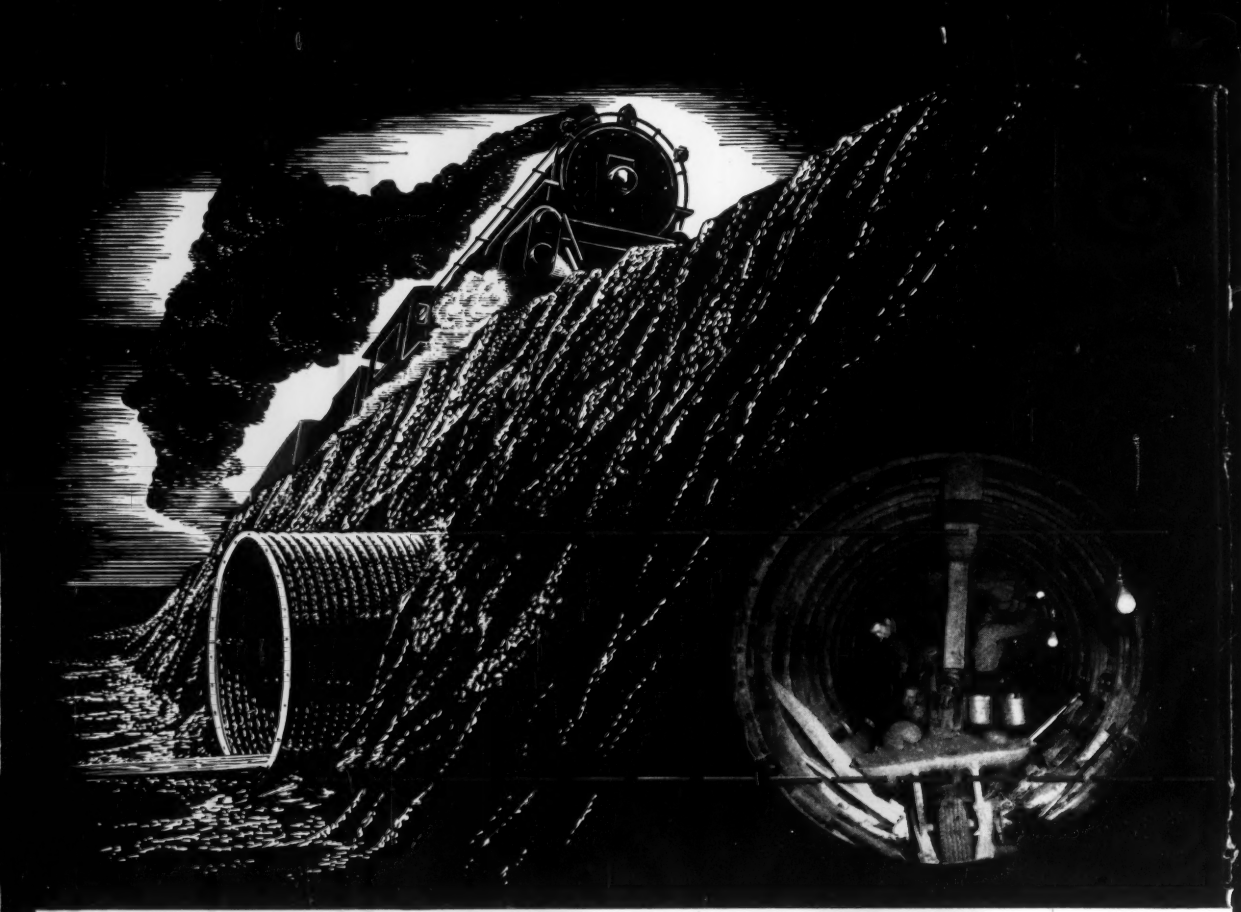

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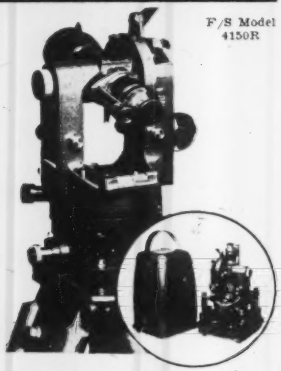

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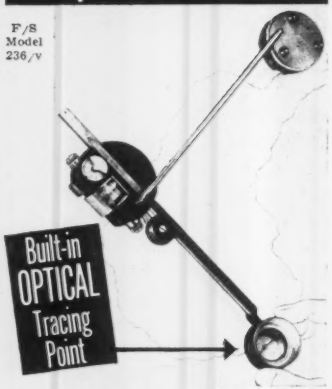

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Volume 149 July 17, 1952 No. 3

WALDO G. BOWMAN
Editor

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ROBERT F. BOGER
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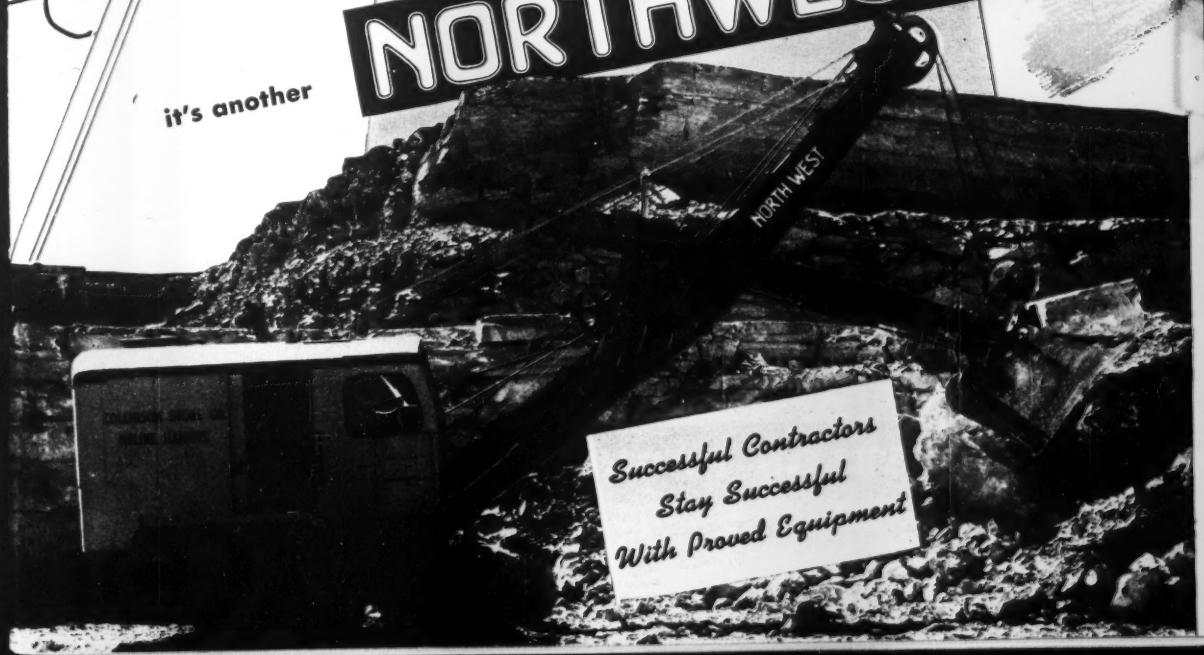

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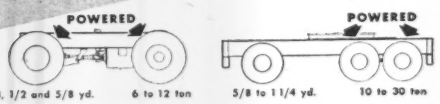

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READER COMMENT

Another oldest

Sir: One of the representatives of the Bethlehem Steel Co. in Philadelphia called my attention to a statement on p 14 of the May 22, 1952 issue of the Engineering News-Record in which our company was listed by W. D. Dean, general manager of the Bureau of Contract Information in Washington, as one of the older construction firms in the United States.

It would interest me very much to know whether or not the firms listed in this article are still under the control, management and direction of the founders' family.

While the B. G. Coon Construction Co. was incorporated in 1907 it was the outgrowth of the business conducted by Bolton G. Coon since about 1886 and he carried on a general contracting business started about 1848 by his father Alfred H. Coon, both of Kingston, Penn.

We carry on our stationery as above "Contractors since 1854," this date being used because it was at that time that Alfred H. Coon came to Kingston and with his brother Giles had a contract for the construction of a portion of the Delaware. Lackawanna and Western Railroad between Kingston and Bloomsburg.

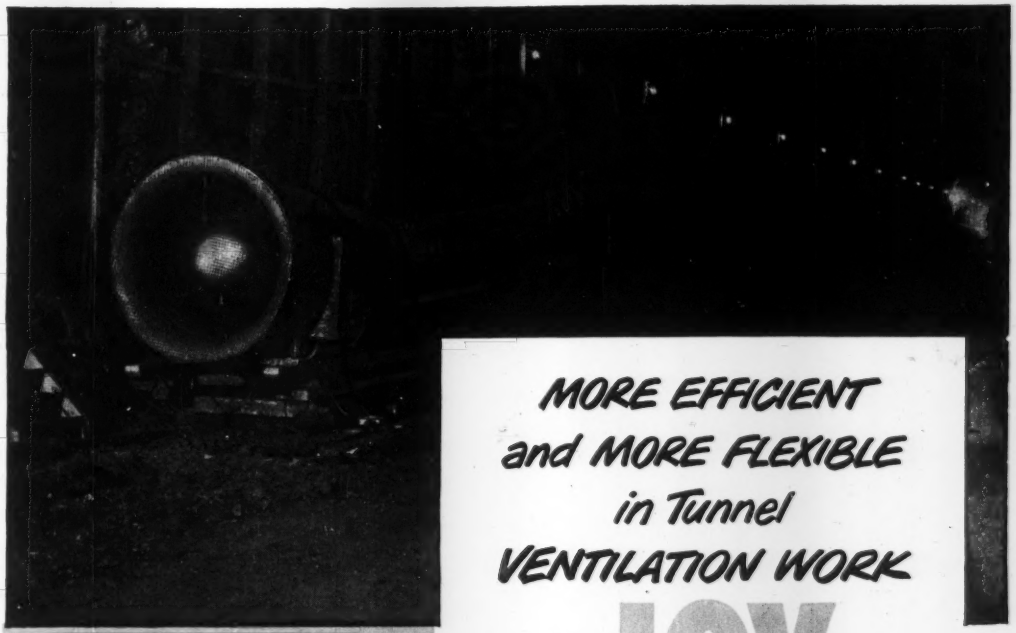
A. Harden Coon
President
B. G. Coon Constr. Co.
Luzerne, Pa.

Formulas preferred

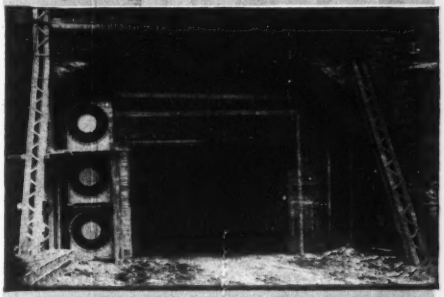
Sir: In "Book Reviews," ENR June 5, p 94, the reviewer of Kleinlogel's "Rigid Frame Formulas" has written, ". . . designers familiar with such analytical methods as moment distribution, column analogy or dummy-unit load will probably find use of the formulas impractical for all but the simplest types of structures and loadings." This statement is definitely misleading because it implies that apart from direct substitution in the formulas, in spite of the multiplicity of simple cases, no further practical use is presented.

In a paper entitled, "On the Extended Use of Kleinlogel's Rahmenformeln," published in the Canadian Journal of Research, Dec., 1948, I described how the use of the book can be greatly extended to multiple frames, the solution of which would require considerable effort even for

(*Continued on p 10*)



In this tunnel job, a JOY AXIVANE Fan blows air to the face through lengths of flexible Spiratube.



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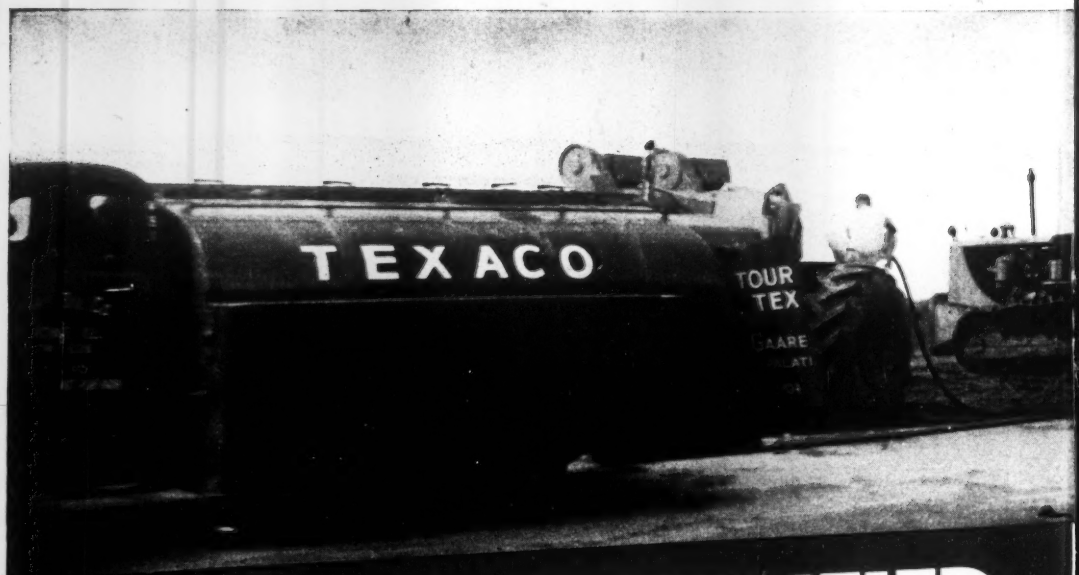

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5. Air Compressor Lubrication: Use the Texaco air compressor oil recommended to exactly suit your operating conditions.

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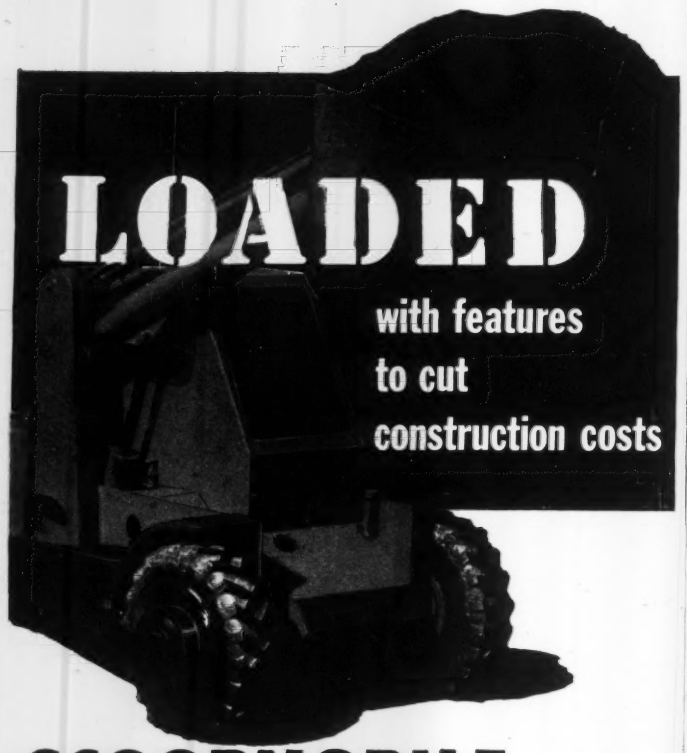

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(Continued from p 6)

those who are experts in moment distribution.

Fundamentally, all methods of structural analysis can be developed from the Maxwell-Mohr equations. One way is to adopt a statically determinate primary structure by the insertion of the necessary and sufficient number of cuts or hinges. This establishes a number of redundant quantities which appear as unknowns in the equations. Because the equations are linear and simultaneous they can be solved by any one of a number of methods. This process becomes impractical—time consuming—when the number of unknowns is large. Therefore, any modification of the process that will reduce the number of unknowns is of practical importance.

In the paper referred to, I showed how the number of unknowns can be substantially reduced by the use of statically indeterminate moment diagrams. This consists of using the indeterminate frames as the component parts of the primary structure. The saving in time is paramount. The moment diagrams are readily available in "Rigid Frame Formulas."

I. F. Morrison
University of Alberta
Edmonton, Alberta

How careless!

Sir: The article in ENR June 19, p. 28, regarding the overpass failure in Boston, Mass., reminds me of an occurrence some years ago, when a deck highway bridge was under construction across a river. The bridge members were delivered on barges. The bridge was being erected cantilever style, with a creeper traveler, which raised the members from the barge and set them in place.

The traveler had been moved out to a new position and had started to raise the first member in the new panel. When the member was in the clear, the barge was moved away, and then, when the member was raised almost to its position, the traveler toppled into the river, carrying the member, the traveler operator and the signal man down with it.

It couldn't possibly have happened because the back end of the traveler was bolted down! Unfortunately, the member to which the traveler was bolted down, was not bolted down.

Surely, some engineer, who has access to the plans and specifications, will come up with the proper explanation as to why the Boston accident happened.

A. K. Wetzig
Houston, Texas

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AISC — American Institute of Steel Construction, Inc. — Founded 1921

On all of these projects, this experienced organization provided complete fabrication of the structural steel.

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1952 Award

OF THE CONCRETE REINFORCING STEEL INSTITUTE

presented to ARSHAM AMIRIKIAN

...for his contribution to the advancement of reinforced concrete

Arsham Amirikian (left) receiving the 1952 Concrete Reinforcing Steel Institute Award from Prof. H. J. Gilkey, Acting Award Committee Chairman, at C.R.S.I. 28th Annual Meeting at the Greenbrier, White Sulphur Springs, West Virginia.

Arsham Amirikian, Chief Designing Engineer, Navy Bureau of Yards and Docks, received the 1952 Award of the Concrete Reinforcing Steel Institute for his work in the development of new methods of reinforced concrete analysis and their application to the design of airplane hangars, industrial buildings, auxiliary floating craft, huge floating drydocks, and gate caissons. Mr. Amirikian, who is a graduate of Cornell University, is the author of the book, "Analysis of Rigid Frames," published in 1942.

The C. R. S. I. Award is administered by representatives appointed by the American Concrete Institute, the Associated General Contractors of America, and the American Society of Civil Engineers. The 1952 Award Committee included the following: Chairman—Charles S. Whitney, Amman & Whitney, New York (American Concrete Institute); Professor H. J. Gilkey, Head of the Department of Theoretical and Applied Mechanics, Iowa State College, Ames, Iowa (American Society of Civil Engineers); and Earl J. Wheeler, Frank Messer & Sons, Inc., Cincinnati (Associated General Contractors).

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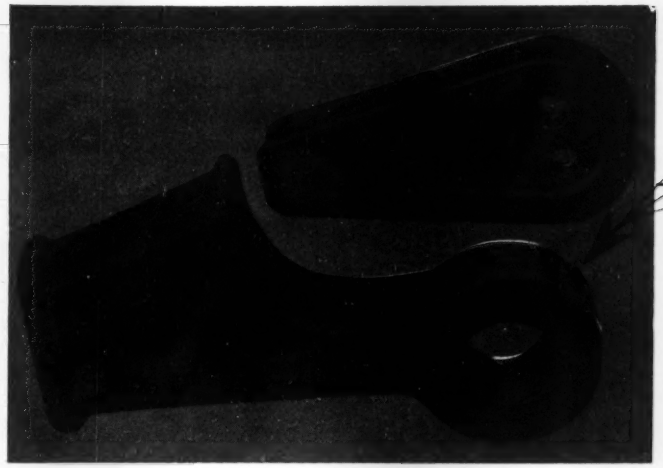

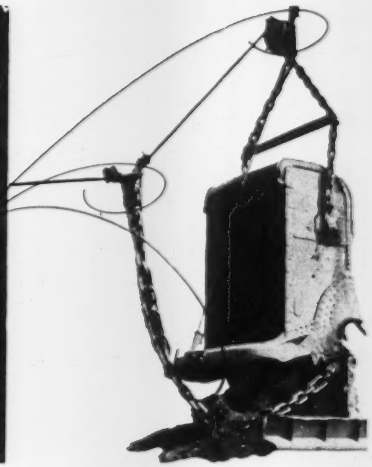

Left: Under pressure, rope retains its round cross section without crushing or distortion, developing over 90% of rated rope strength.

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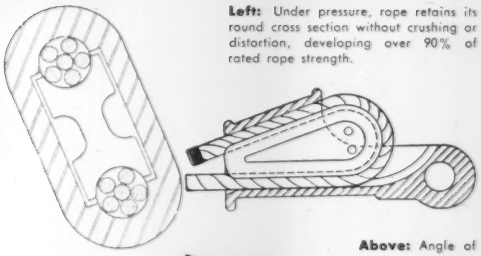

Above: Angle of wedge prevents jamming and facilitates removal of wedge from socket.

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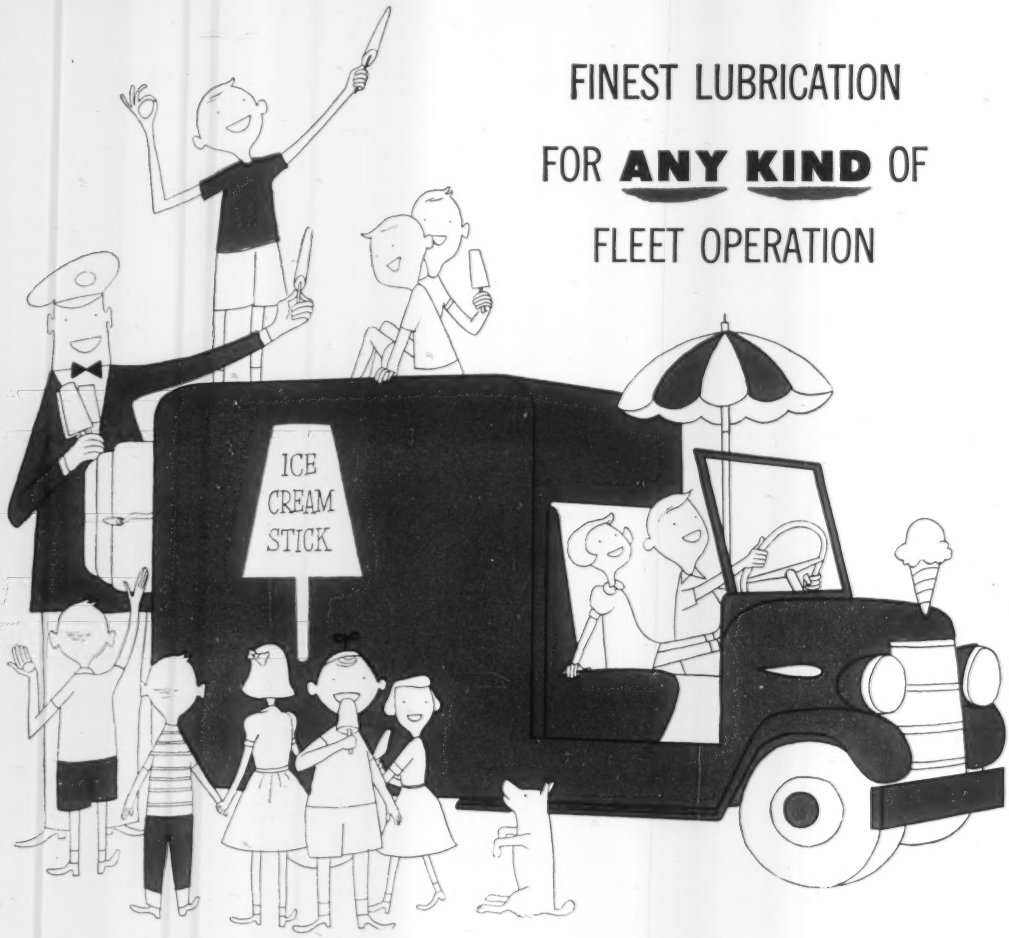

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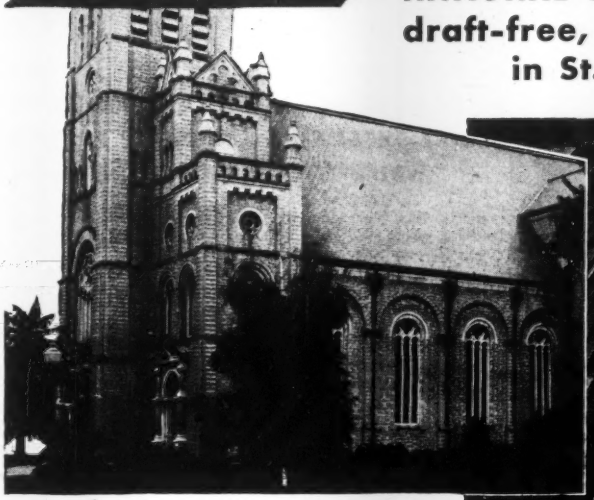

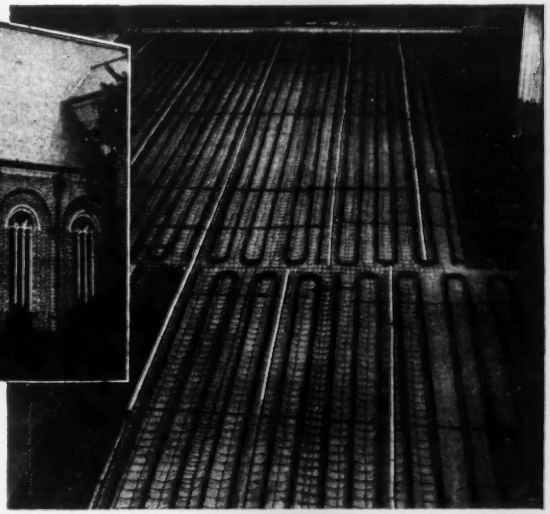

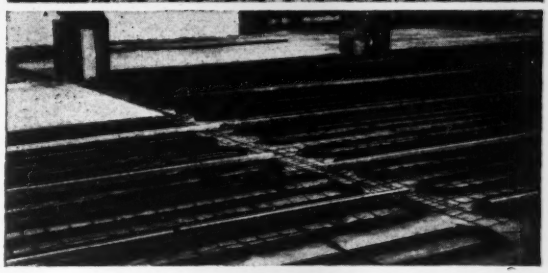

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Below, air view of downtown Manhattan, Gov. Alfred E. Smith Houses, left foreground. Upper left, Governor Smith's statue in park which is part of project.

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FINANCIAL PICTURE IMPROVES

Although political uncertainties now overshadow all financial planning, there were these points of interest along the financial front for the construction industry last week:

1. Homebuilders—though disappointed with the final result of their push to relax Regulation X—could look forward to the prospect of an improving market for mortgages.

2. Major life insurance companies reappeared in the field of industrial building financing.

3. The states were hard at work in an effort to broaden their search for new sources of revenue.

• **Better for housing**—In spite of the fact that the hoped-for relaxation of down-payment requirements in Reg X can't be effective before December—and might not be effective then (ENR July 10, p. 23)—the housing men had cheering news from the powerful United States Savings and Loan League.

Said the league: Several recent developments suggest that mortgage lending terms will grow slightly more favorable. The bankers felt that high-priced government bonds with reduced yields make mortgage investment more attractive; a reduction in the large backlog of prior commitments to make loans will release more money for new loans; the flow of savings to the banks continues at a high volume.

And, commented the league, in March of this year savings associations accounted for 35.5% of all mortgage financing.

There was added reason for optimism in the mortgage field: Congress' action (ENR July 10, p. 22) in voting $900 million to FNMA for use in making advance commitments for purchase of mortgages from lending institutions on defense and military-personnel housing.

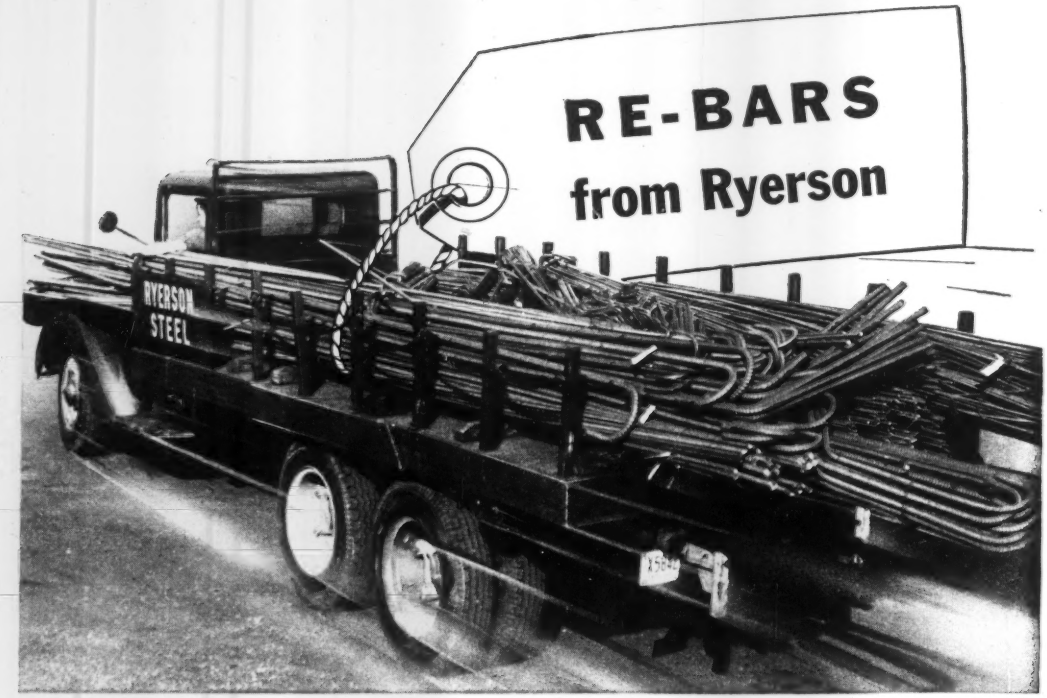
An assured secondary market would make it possible for the lenders to keep themselves in a far more liquid position, moneywise.

• **Boost for industrial**—The insurance companies, which had been holding off their commitments in housing financing for several months and had been preoccupied largely with public financing, suddenly reappeared in the industrial construction financing picture.

Deals reported were topped by a $75-million loan to Allis-Chalmers Manufacturing Co.—to be used in part to finance the completion of a current expansion program, and for repayment of bank loans, part of which also was employed for construction.

• **But states have it tough**—The states, however, were still hard at work trying to find new sources of revenue with which to meet—among other things—expanding demands for public works construction.

Measures that broadened the taxing powers of local governments were passed in three states (New York, Missouri and Virginia), and provisions for new greater allocations of state funds to local units went through in Louisiana and Mississippi. Next year—when 44 of the 48 state legislatures will be in session—observers look for many more such bills.



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IT WAS A PRETTY GOOD CONGRESS—That is the general feeling among construction men about the session of Congress that adjourned last week. Organizations such as the Associated General Contractors and the National Association of Home Builders were busy sorting through the hundreds of bills passed during the last minutes of the adjournment rush, trying to get an accurate assessment of what had happened. On the whole they are pretty well satisfied.

AGC WAS HAPPY to see the bid shopping bill, it had fought so bitterly, die in committee. Increased construction appropriations, particularly the 10% hike in federal aid to highways over last year, is pleasing not only to the AGC, but to the American Association of State Highway Officials and the American Road Builders Association. They fought shoulder-to-shoulder before congressional committees to stop Truman's proposed slash in funds.

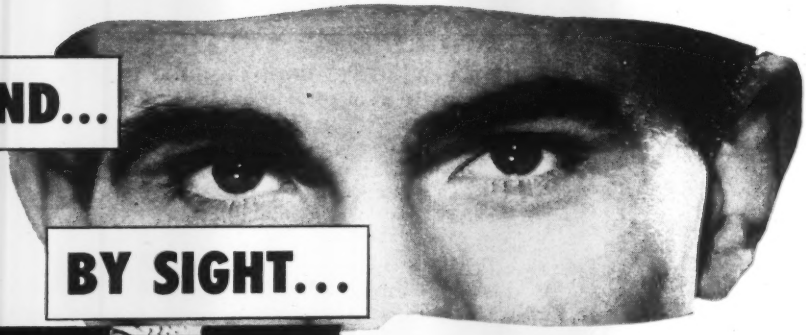
NAHB IS HAPPY over the Teague bill which granted GI housing benefits to some 870,000 veterans of the Korean war. It is glad compulsory warranty provisions were left out. New mortgage financing provisions are satisfying, although some NAHB amendments such as the "one for one" formula were omitted. It feels there is hope for benefits to private homebuilders in the cutback of public housing appropriations to 35,000 starts from 50,000 last year. They are pleased with an amendment to the Supplemental Appropriations Act that provides no federal funds can be used for public housing where a local community has voted against it, in spite of an annoying provision that the community must tender the amount of liability if the project has been started. This may not help much in Los Angeles (ENR June 12, p. 22).

NOT ALL PEACHES AND CREAM—AGC is most unhappy that the judicial review bill it had fought for to offset the Supreme Court's Wunderlich decision did not pass before Congress adjourned. Now it will have to wait until the next session. NAHB is pained by the interpretation housing officials have put on the new Defense Production Act provision easing Regulation X restrictions on home down payments, which will delay its effect for five months.

Many government agencies that suffered cuts in appropriations also were unhappy. Typical is the Civil Aeronautics Administration which finds its program for improving existing airports, to take care of modern aircraft developments, badly dented. It is allowed $11.75 million as compared with $16 million for last year to do the job. This cutback will require a reevaluation of the program to eliminate some projects and reduce others.

IN THIS ISSUE—Structurals get price lid (p. 21) . . . Steel strike cuts deeper into construction (p. 22) . . . Details on last-minute congressional action (p. 23) . . . Record non-atomic blast fired (p. 24) . . . Military construction booming (p. 26) Walter L. Greene takes over key housing post (p.28) . . . CISC spokesman analyzes two "purposeless" strikes (p. 33) . . . Hinged-arch building raised with winches (p. 36) . . . Turner Turnpike hits home stretch (p. 38) . . . Fairless Works waste story (p. 44) . . . New culvert design cuts costs (p. 46) . . . International paper firm to build new plant and community (p. 49) . . . New engineering field station set up (p. 71) . . . Work slowed on Eildon dam (p. 80) . . . Turner looks to the future (p. 123) . . . Building boom in Louisiana (p. 130) . . . New Products (p. 149) . . . Editorial (p. 152).

BY SOUND...



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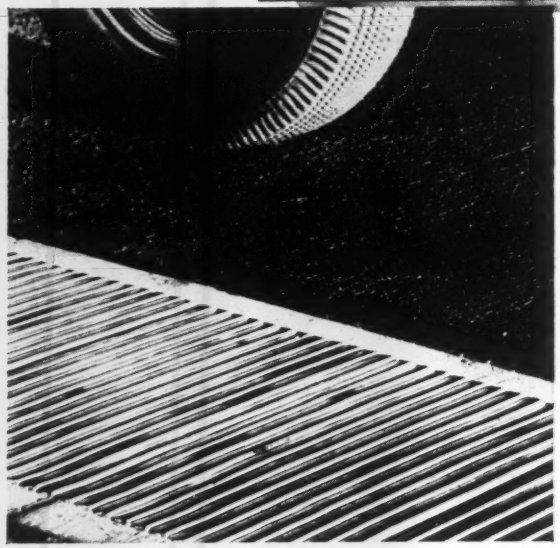

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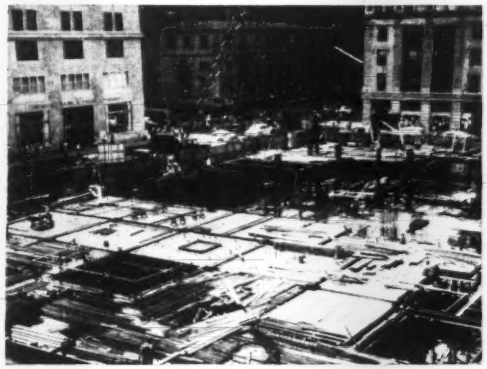


PROJECTS SUCH AS this office building in New York will feel effects from cold blast furnaces long after the strike ends.

Steel shortage tightens grip

The shortage of steel resulting from the steel strike is beginning to bite into construction projects all across the country, according to an ENGINEERING NEWS-RECORD spot check in key centers of the building industry.

Total steel production lost during 42 days of strike, through last Monday, was put at close to 14 million tons. This compares with an estimated loss of over 12 million tons during the 36-day steel strike in 1949. Losses in structural steel production totaled over 400,000 tons.

These losses are beginning to have their delayed impact on construction as steel supplies continue to tighten. And the situation will become worse before it becomes better. Even if the strike should end this week, before the mills get back to normal operations total losses will soar over 15 million tons, and losses in structurals will be upwards of 500,000 tons.

Many steel fabricators predict it will take up to six months following the end of the strike for them to recover to normal.

Annual vacations have relieved the pressure in many firms; some are continuing to operate overtime; some have already reduced operations; and an increasing number are becoming desperate. There have been no sizeable layoffs in the building trades as a result of the steel strike, but some are bound to start occurring next month.

The National Production Authority last week issued a new policy ruling that contractors with enough carbon steel in inventory to finish a construction project can get an O.K. to start the job—except on recreational, entertainment or amusement projects. It also specifies that NPA may allot copper and aluminum for the job as required.

This ruling is well-intentioned, but the relief it will provide is slight. Already steel losses make it appear certain that controls will continue through the second quarter of next year.

The proportions of the cement shortage developing from the shutdown of Universal-Atlas are becoming increasingly critical. Several areas already are feeling construction delays because of short supplies.

• **Price controversy**—There are several indications now as to what sort of price increase, for steel products, the steel companies expect to get.

Pittsburgh Steel Co. has asked the government for a price boost of $5.32 per net ton for steel products. This would be in addition to an increase of $2.84 put into effect under the Capehart Amendment to the Economic Controls Law. The total increase sought would average $8.16 per net ton. The firm recently signed a new agreement with the CIO steelworkers.

Early this week, the Office of Price Stabilization turned down Pittsburgh Steel's application—along with similar applications made by Weirton and by American Rolling Mill—asking for price boosts of $5.50 and $6 per ton, respectively, not including Capehart. In doing so, OPS said it still maintains the industry is not entitled to an increase beyond the $2.84 per ton permitted under Capehart.

As steel industry and steelworkers negotiaters met in Washington early this week, however, a high government official said mobilization authorities are ready to offer the steel industry $5.65 as a step toward settling the dispute. This would cover $4.95 as a price boost and 70 cent per ton to cover higher freight costs. It was understood the offer was made over the objection of OPS.

Typical of reports received by ENR across the country is this one from Pittsburgh, Pa. The steel situation is spotty, but steelmen agree generally that there was a surprising amount of steel on hand, including structural steel, at the start of the steel strike June 2.

The result is that many Pittsburgh district fabricating firms have kept operations going—either full blast or on a reduced scale. Several companies have enough steel left for a few weeks of continued operation.

There are hardship cases and some companies are closed. American Bridge Co., biggest structural steel firm in the area, is strikebound. But warehouse stocks of structural steel and other products are vanishing. Demand is called good, but not sensational.

One firm is reported ordering 300 tons of structurals from foreign sources and premium-priced domestic producers for delivery this month. The cost, according to Iron Age, is $6.65 base. They will sell at $5.70 base.

Inventories were not in good bal-

ance before the strike and will be worse when the walkout ends. The situation is not expected to return to normal until three or four weeks after the strike ends.

As far as construction goes, it's the steel industry around here which is feeling the worst pinch. Many new mill-modernizing projects are being held up by the strike. For example, three new by-product coke ovens at Clairton, Pa., plant of U. S. Steel, a $20-million job. And don't forget the huge Fairless Works of U. S. Steel at Morrisville, Pa., it's way behind schedule.

A shortage of cement, laid to the steel strike, is interfering with much construction here—particularly home-building. Universal-Atlas, U. S. Steel subsidiary, is the large local supplier now strikebound.

But the big downtown building project in the Golden Triangle don't appear to be affected yet. Building tradesmen don't seem to be idle in large numbers. The Industrial Council of the Chamber of Commerce says it is not a problem.

• **Different view**—For another slant on the affect of the steel strike, let's go to Houston, Texas. No structural steel fabricators have had to close down, but most if not all have had to curtail working hours and days worked.

One fabricator reports that it was in a serious situation until the union agreed to the shipment of steel for defense. This permitted the firm to go on a restricted basis of five days per week. At this rate it expects to run about three weeks. After that it will probably go on an even more curtailed basis, or shut down entirely.

Shops have been able to keep going because there was more steel than usual in warehouses when the strike occurred. Then too, shipments from Birmingham and the eastern mills required 30 days in many cases and so some of this steel, in shipment before the strike, was still arriving in fabricators' shops.

Recovery is expected to be slow. Steel mills will require from two to three weeks or more to get shipments of steel rolling again, then the steel will take several weeks more in shipment. Fabricators estimate it will require a minimum of four weeks and more likely from six to eight weeks after the end of the strike to recover.

• **West Coast situation**—In the Los Angeles area, the smaller fabricators of structurals are still producing and probably will be for another month or more. The two major local fabricators, however—Bethlehem and Consolidated Western—are shut down directly by the strike. Reinforcing steel for large projects is almost impossible to get now, and one of the biggest construction companies estimated that if the steel strike were settled today, it would take three months to get its big jobs underway.

Three schools and two large office buildings will not start until steel can be obtained. Construction men believe there will be a waiting period for most non-defense building construction of six months or more.

• **Shortage next spring**—A far more ominous threat than the current lack of steel or labor, however, appears on the steel-fabrication horizon. It is the possibility of another shutdown of the mills next spring because of a shortage of iron ore that may exist at that time. Inability to unload ore at the mills has curtailed shipments from the iron mines. As a result, ore shipments to mills on the lower Great Lakes up to July 8 of this year were already 13 million tons less than shipments for the same period last year. At the same time new blast furnaces scheduled to begin operating in the near future will increase this year's ore requirements above 1951.

The Lake Superior Iron Ore Association estimates that for each day during which ore is not shipped nearly 200,000 tons are being added to next spring's possible shortage. Nearly 7 million tons of ore, which could be shipped immediately, are now stockpiled on the upper lakes. Shipment of this ore would help alleviate the shortage which is almost certain to occur early in 1953.

Ore carriers on the Great Lakes normally operate only seven months each year. This means that each day during the shipping season, ore should arrive at the mills at the rate of one day's current needs plus five-sevenths of a day's requirements for next winter when the lakes are not navigable. Consequently, for every day that the strike lasts we face the possible loss of five-sevenths of a day's blast furnace production next winter.

OPS imposes ceiling on steel fabricators

After conferences with the Structural Steel Fabricators Advisory Committee, the Office of Price Stabilization has issued a new ceiling order applying to fabricators of structural steel, miscellaneous and ornamental iron and vessel shop fabrication, and assembly or erection in the field. It became effective Tuesday.

In general the products covered are components of buildings, bridges, and other structures. They all involve shop fabrication and assembly or erection in the field. They are "tailor-made" for individual projects.

Arnall issues new regulation.

The new regulation will have no immediate effect on prices. It makes no change in ceiling-price levels.

Until the new regulation went into effect, the fabricators and erectors who come under its provisions have had the option of determining their ceiling prices under the original General Regulation or under Ceiling Price Regulation 30, covering machinery and related manufactured goods.

Peculiarities of the industry, however, demanded a regulation that would take into account the nature of the products and the manner in which the industry operates. Neither regulation provided adequate or appropriate pricing techniques. To frame the new regulation, the OPS held a series of conferences with industry advisers.

Under the new regulation, fabricators and erectors may use higher current costs in their figuring. In addition, they can reduce the basic period profit mark-up 10%. The result: They will be able to realize about the same dollar-and-cents profit they would have realized with their normal mark-up in the base period prior to December 1950.

Significance of the new order appears to lie in the fact that OPS is becoming increasingly aware that various phases of the construction industry have specific problems not covered by a general pricing order.

Ellis Arnall, Director of the Office of Price Stabilization, said the agency did not expect any substantial change from the level of ceiling prices under two earlier regulations. The general consensus among fabricators and erectors agrees with this—but they expect any price rises granted to the steel industry, plus additional labor costs will be taken into account by the order.

Truman signs construction money bills

In its closing hours Congress passed appropriation bills containing hundreds of construction projects. Here is a rundown on some of the more important ones that were not covered fully in ENGINEERING NEWS-RECORD's roundup last week that went to press just as Congress adjourned:

• **Military public works**—President Truman last week signed a military public works bill authorizing new construction totaling $2,398 million. However, the services will require months before they will know just how much money will be spent this year for the projects listed.

Reason: Some of the projects may never be built, and some may be built on a small scale.

As of June 30, the services had a total of $5,130 million available for obligation—$2,149 million in appropriations from the Congress that just adjourned, plus $2,981 million of funds from previous appropriations that have not been obligated.

Another major factor is the plan of the military to present requests for supplemental appropriations for construction when the new Congress arrives in January. Included in the bill signed last week are these major projects:

Little Rock, Ark., Air Force Base, $23.7 million; Dade-County Airport, Homestead, Fla., $24.8 million; Patrick Air Force Base, Coca, Fla., $39.8 million; Limestone Air Force Base, Limestone, Me., $22.9 million; Westover Air Force Base, Chicopee Falls, Mass., $23.2 million; Plattsburg Municipal Airport, Plattsburg, N. Y., $28.4 million; and Tye Field, Abilene, Texas, $23.5 million.

The bill also appropriates $20.2 million for family housing, troop housing, administrative, operational and maintenance facilities, storage facilities and utilities at Fort Richardson, Alaska. It also appropriates $20.7 million for similar installations at Okinawa.

• **Civil functions work**—President Truman last week approved a bill appropriating $584,061,600 for the Army Engineers' construction program in the year which began July 1. It contains $236,788,800 for rivers and harbors and $255,742,800 for flood-control work. Among the major projects listed were:

Rivers and harbors—in Florida, Jim Woodruff lock and dam, $10.3 million; in Oregon, McNary lock and dam on the Columbia River, $63 million; The Dalles lock and dam, Oregon, $20 million; Old Hickory lock and dam, Tennessee, $10 million; Chief Joseph Dam, Washington, $15 million.

Flood control—Folsom Reservoir, California, $17 million; Garrison Reservoir, North Dakota, $31 million; Detroit Reservoir, Oregon, $10 million; Lookout Point Reservoir, Oregon, $16.6 million; Fort Randall Reservoir, South Dakota, $32.5 million.

• **Schools**—The $60 million that Congress voted for school construction in defense areas won't begin to take care of new school loads, in the opinion of the Office of Education.

This amount, contained in the supplemental appropriations bill, when added to the $135 million voted in the regular budget, is $20 million short of the $215 million that Office of Education said it would take to house 90% of the current school overload in defense and federal-activity areas.

The total $195 million is earmarked for areas such as atomic energy installations or military posts where normal school loads have been greatly increased.

No construction has yet been started, so none will be completed for the coming school year. First commitments are expected to go out this week and no construction will be completed before September, 1953.

• **Atomic energy plans**—Like one of those cliff-hanging scenes in the old movies, an adjourning Congress rescued the $1,259-million gaseous diffusion plant which the Atomic Energy Commission proposes to build as the keystone for its new expansion program.

Money for the plant was approved in the last hour of the second regular session of the 82nd Congress.

In breaking a two-day deadlock, Congress approved funds amounting to nearly $2.9 billion to be used by AEC to construct the new plant, probably in the Ohio valley, and to expand two of its present gaseous diffusion plants. New facilities at Oak Ridge will cost $464 million and at Paducah will cost $459 million.

Power requirements for these new plants will total 3.4 million kw and the plan is to let electric companies furnish a large part of the power. In addition, the supplemental AEC funds approved by Congress will permit expansion of the H-bomb plant on the Savannah River and the reactor plant at Hanford, Wash.

Increased power requirements for these proposed additions were not spelled out in the testimony given to Congress. AEC is negotiating with a group of 15 power firms to supply the proposed new plant. For the additional energy required for Paducah, AEC is negotiating with Electric Energy, Inc., to supply 25% and the Tennessee Valley Authority will supply the rest. TVA will also supply all of the new capacity needed at Oak Ridge.

Los Angeles housing feud erupts into damage suit

Charges of "bureaucratic dictatorship" have been redoubled following the action of Los Angeles' City Housing Authority in filing damage claims of between $1.5 and $2 million against the city. CHA charges it has suffered to that extent from delay caused by the city council's "obstruction" of the bitterly contested $110-million housing program.

Opponents of the program maintain the housing agency is violating the plain will of the people in ignoring a 378,343 to 258,718 vote against it last June 3.

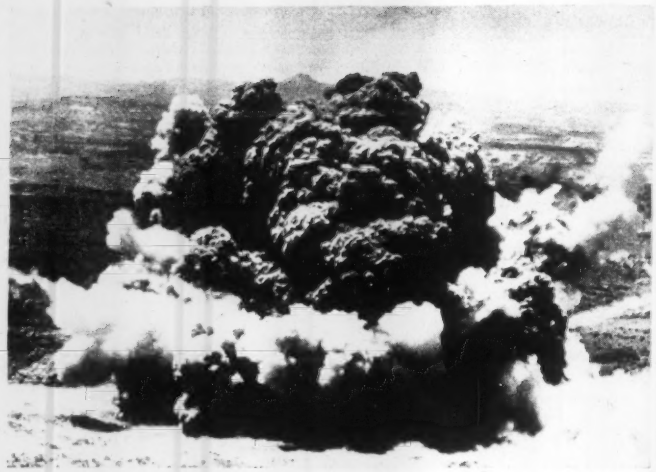
Ire of the anti-housing forces was further increased by revelation that CHA has let two new contracts totaling $6 million.

In deciding on further action, the councilmen are devoting considerable worry to the threat of contempt-of-court action if they refuse to vacate streets and take other legislative steps necessary for continuing work on the program. They have been ordered by the California State Supreme Court to fulfill the obligations of the city-CHA cooperation agreement.

U. S. Supreme Court Justice Harold H. Burton turned down a petition for stay of the state court's writ of mandate, pending possible hearing of the case by the U. S. court after it reconvenes next October.

Mayor Fletcher Bowron and other pro-housers contend that the city has no other legal course than to carry out the contract, in spite of the June 3 vote. The anti-housers contend that the contract can and should be ended by mutual consent.

Meanwhile some comfort to both sides came when both houses of Congress passed a rider to a supplemental appropriations bill, denying federal funds to housing projects repudiated by the cities where they are to be located. This naturally was considered an anti-housing victory. But the rider provides specifically that "funds must be tendered" in full to reimburse the federal government for monies expended. Whether or not Los Angeles would have to repay the some $13 million expended on the program was part of the pre-June 3 arguments. The pro-housers said "Yes" and the anti-housers said "Maybe not."



EXPLOSION AT BUCKHORN, WASH. near Utah produced extensive test data. (Wide World Photo.)

Non-atomic blast sets record

A four-year underground explosion test program carried out by the Corps of Engineers was concluded at 11 a.m. July 8 at Buckhorn, Wash., near Castle Dale, Utah, with the explosion of a 320,000-lb charge of TNT in a carefully prepared sandstone site.

The charge was as big as that fired in dry clay near Dugway Proving Grounds, Utah, last year—and that was the largest non-atomic blast deliberately fired in world history, as far as known from information available outside the Iron Curtain. The July 8 release of 160 tons of high explosive produced greater impact and shock, however, due to the much greater resistance set up by sandstone.

The test blast was set off in the upper face of a sizeable cliff—the depth at which the charge was placed being "classified." At an unreported distance beneath the charge, a tunnel—its entry is big enough to accommodate a large truck—was driven into the cliff-face for a footage that is likewise secret.

Chambers and drifts were driven from the tunnel in a variety of shapes and sizes, the basic problem of the test being to determine the effect upon underground rock shelters of missiles that come from above. Army Engineers report, "The idea is to imitate the blast of a missile at the depth we know a missile might penetrate, and thereby give us knowledge of the chances of survival in solid rock shelters.

• **Movements measured**—James C. Coombs of the Corps of Engineers, serving as engineer in charge of the field test program, had overall supervision of the big blast, under the command of District Engineer Col. Clarence C. Haug, project supervisor for Morrison-Knudsen, Contractor for site preparation work, was Larry Wicks.

In addition to driving the tunnel and chambers, drilling calyx core holes to measure movement in deep holes surrounding the site, and establishing the 70-man "camp" 17 mi from Castle Dale and nearly 150 mi from Salt Lake City, M-K men moved four carloads of high explosives to the cliff-top hole, and compacted rock atop the TNT.

John Lutz, explosives expert of Engineering Research Associates—contractor for technical phases of the operation—supervised the setting up of the charge along with Frederick Rietz, field technical adviser for ERA. ERA expedition field engineer Thomas Hver had the delicate task of setting up proper instrumentation for recording the blast and its results, utilizing well-barricaded trucks and trailers placed about ½-mi away from the charge in a sheltered ravine. Bureau of Mines forces on the scene to measure rock strain utilized an unmanned trailer located ¾-mi from the blast site.

The main body of observers, representing most branches of the armed forces and several universities, were stationed at posts six miles distant and atop a cliff. The shock wave, was recorded on instruments more than half-way across the continent at Carnegie Institute of Technology in Pittsburgh, Pa.

TEST TUNNEL DIMENSIONS were kept secret, but it was a sizeable bore.

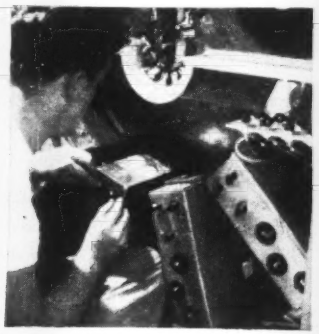
STEREOPTICON cameras recorded before-and-after view of shelter walls.

• **Site prepared**—Batteries of high speed cameras, including motion picture and stereopticon types, were set up to record the explosion both above ground and inside the tunnel and caves. The sandstone walls underground were carefully whitewashed to better record fractures and breaks, while the test site was honeycombed with instruments to record behavior of shock waves and the strains set up in rock structures.

Cameras and instruments were triggered into action by a cam timer located in one of the heavily fortified recording truck-trailers. Impulses caused by shock waves at the target and near the charge were picked up and carried by cables to the recording trucks. Inside the vehicles, impulses pass through amplifiers for conversion into light in cathode tubes.

The light, passed through an optical system, is caught on fast-moving film. This image, a streak of light of varying width, was the final product of the test—giving a precise indica-

CALYX HOLES were drilled for use in measuring rock movement.



FILM INSIDE "fortified" truck-trailer records shock data on the blast.

tion of the strength of the shock at various distances from the blast.

Army Engineers report the charge was four days in the loading with men lugging 100-lb blocks of TNT under the hot Utah sun. They declared the use of TNT, which has standardized characteristics and an explosive force that can be correlated with energy released from other sources, should give an exact insight into many of the effects an A-bomb explosion would have in similar rock.

The underground explosion test program is reported to have cost "in the neighborhood of $3 million," including the mammoth dry clay blast at Dugway a year ago, this month's Buckhorn, Wash., sandstone blast, and some 70 other explosions of varying intensity in a variety of soils.

Details of results will be held "classified" by defense officials, according to Army, Air Force, and Navy observers at the last site. However, one field worker commented, "We sure blew a helluva hole."

A dust cloud fully 2,000 ft high hung over the blast scene for five minutes before dissipating. A considerable jolt was felt by observers.

Turnpike legality cleared

The Ohio Supreme Court, with one dissenting vote, last week upheld the constitutionality of the Ohio Turnpike Act. The decision came far in advance of the September 4 deadline for the turnpike commission's delivery of bonds that a syndicate of 411 investment banks have agreed to purchase and market.

The commission plans to begin actual construction on the $326-million toll highway across northern Ohio in December with completion expected in 34 months (ENR June 19, p. 21).

Contracts with 15 engineering firms for design, supervision and construction of the turnpike also were approved by the commission last week. All will work under the general direction of the J. E. Greiner Co., of Baltimore, general engineering consultants to the commission.

To speed design work, the 241-mi superhighway was divided into 16 divisions varying in length from 8 to 18.8 miles, and the fee that should be paid for engineering work on each section was set by the Greiner Co. as a percentage of the estimated cost.

The amount of these fees, which range from 6% to 8%, brought a protest from one member of the commission, J. Gordon McKay. He held that the fees appeared to him to be higher than the fee schedule of the American Society of Civil Engineers.

• **Pay contingent**—Pay for the engineering firms is contingent upon completion of the sale of the commission's bonds. Their contracts give them a very tight schedule on which to complete the design work, which makes it necessary for them to start work at once.

The pay contingency has resulted in a refusal by the firm of Frederick R. Harris Associates, New York, to sign the contract offered to it. It had submitted a proposal on a section of 8.9 miles in Trumbull County.

Following the refusal of the Harris firm, contract for the work was awarded to Howard, Needles, Tamman & Bergendoff of Kansas City, giving that firm two sections.

T. J. Kauer, State Highway director and a member of the commission, stated at the time of the award that it is hoped active construction of the first 23 mi where the turnpike will connect with the Pennsylvania Turnpike can be started in December of this year and in service by Jan. 1, 1954.

Meanwhile the controversy over use of asphalt or concrete in construction of the highway has flared again; the asphalt industry is seeking alternate bids on turnpike work. Greiner Co. has recommended that bids be taken only on portland cement concrete construction.

At a recent commission meeting, Chairman James W. Shocknessy and Robert Dow Hamilton, representative of the asphalt industry engaged in a heated verbal exchange that at times reached the shouting and gavel-pounding stage. As the matter now stands, it is still up to Greiner Co. as to whether alternate bids will be sought.

• **Stumbling block**—One possible block in the path of the commission is a move by three Ohioans who have notified the U. S. Supreme Court they will ask for review of an Ohio Supreme Court ruling denying them permission to intervene in a case involving constitutionality of the Turnpike Act. Their petition states the decision deprives them of their rights under the "due process of law" amendment of the Constitution.

The Maumee, Ohio, dissenters in the most recent Ohio Supreme Court decision also have indicated they may carry an appeal to the U. S. Supreme Court. Review of the Ohio court's action cannot be considered by the U. S. Supreme Court until the fall.

• Here are the firms named to build the Ohio Turnpike:

Richardson, Morehouse, Ramsey & Fisher, Pittsburgh; 15 miles in Mahoning County; $11,812,000; 7.17 percent.

Ammann & Whitney, New York City; 15.9 miles in Mahoning and Trumbull Counties; $12,000,000; 7.2 percent; $11,923,000; 6.9 percent.

Howard, Needles, Tamman & Bergendoff, Kansas City, Mo.; 37.7 miles in Trumbull, Portage and Summit Counties; $28,721,000; 6.6 percent.

Hazelet & Erdal, Cincinnati, 16.9 miles in Summit and Cuyahoga Counties; $17,783,000; 6 percent.

Knappen, Tippetts, Abbett, McCarthy, New York City; 15.1 miles in Cuyahoga and Lorain Counties; $14,100,000; 6.5 percent.

Charles E. Deleuw, Chicago; 17.6 miles in Lorain and Erie Counties; $15,925,000; 6.6 percent.

Hardesty & Hanover; Andrews, Clarke & Buckley, New York City; 8 miles in Erie County; $5,348,000, 7.7 percent; bridges over Huron and Sandusky Rivers; $3,705,000; 7 percent.

Balke & Watkins, Cincinnati; 10.7 miles in Erie County; $8,103,000; 7.2 percent.

Brown & Blauvelt, New York City; 16.3 miles in Erie and Sandusky Counties; $11,432,000, 7.6 percent.

Porter, Urquhardt Associated, Newark, N. J.; 16.8 miles in Ottawa and Sandusky Counties; $13,238,000; 7.1 percent.

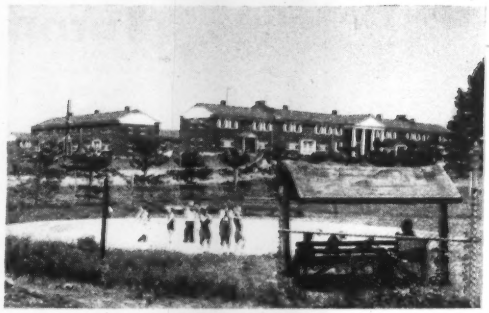
Sanzenbucher, Morris & Taylor, Brookhart & Tye, Toledo; 12.3 miles in Ottawa and Wood Counties; $13,338,000; 6.1 percent.

Alden E. Stilson & Associates, Columbus; 11.9 miles in Lucas County; $11,283,000; 6.5 percent.

Vogt, Ivers, Seaman & Associates, Cincinnati; 12 miles in Lucas and Fulton Counties; $7,907,000; 7.9 percent.

General Industries Engineering Co.; Kenneth P. Shaffer Associates, Philadelphia, and Mansfield, Ohio; 11.5 miles in Fulton County; $7,246,000; 8 percent.

Consser; Townsend & Associates, Chicago; 14.7 miles in Fulton and Williams Counties; $10,856,000; 7.4 percent.



TROOP HOUSING, on and off the post, takes a major share of the construction effort at Fort Knox, Ky.

Military construction program booms at Armored Force training center

The Defense Department's multi-billion dollar expansion blueprint for U.S. military installations at home and abroad poses a gigantic task for the nation's construction industry.

All over America, Army barracks, classrooms, hospitals and family housing developments are springing up at an accelerating rate. The end is nowhere in sight. Added to the record building program already underway is another $2.1-billion supplementary construction plan for the fiscal year 1952-53.

The scope of the military building program is typified by the expansion of Fort Knox, Ky., the nation's armored training school. What is happening there is a story being repeated at military installations from coast to coast.

Last year Congress appropriated $37 million for new installations at Fort Knox. This program was hardly underway before the Defense Department asked for $16 million more for housing, and Congress approved the outlay last week along with other Defense Department budget requests.

Under construction now at Knox are permanent housing facilities for more than 7,000 men which will cost $22,701,020. They are being built by Southeastern Construction Co., Charlotte, N. C., T. A. Loving & Company, Goldsboro, N. C., and Doyle & Russell of Richmond, Va.

• **Special quarters**—The barracks, scheduled for completion late in 1953, are the last word in design.

They are called "regimental-type barracks" and were designed by Louis and Henry, Louisville architects, at the request of Lt. Col. Clarence Bidgood, Louisville, district engineer for the U.S. Corps of Engineers.

They are three-story buildings with reinforced concrete frame and exterior curtain walls of concrete block, painted with waterproof paint. Each building houses 225 men—a full-strength infantry company. They contain a mess hall and kitchen, a day room, squad rooms, and administrative rooms for company officers.

Bidgood said the barracks are designed to be built "anywhere in the United States" and they were selected after temperature tests in the nation's three major temperature areas. They have a theoretical "life expectancy" of 25 years as compared to the 10-year expectancy of World War II-type barracks.

• **Other construction**—Thirty-two barracks of this type are going up at Knox, plus four 165-man buildings, five barracks for 105 men, and four bachelor-officers quarters for 25 men each.

Besides this phase of the expansion, the Army is building three regimental headquarters buildings, six battalion headquarters, nine motor-repair shops, two motor dispatch offices, warehouse space and a fire station. Additions are underway to a cold storage plant, a paint shop and all necessary roads and utilities.

Projected for early action is a hospital of 500 beds that will cost $8 million. Designed for expansion to 1,000 beds, it will be nine stories high with a penthouse of two stories. Similar hospitals have been authorized for Fort Belvoir, Va., Fort Bragg, N. C. and Fort Riley, Kansas. Construction contracts for all four are expected to be let early next year.

Another major item on the construction bill at Knox is the Armored Center Academic Building which is already underway and which will cost $605,550. It is T-shaped, two stories high, and has an approximate area of 40,000 square feet.

Scheduled for completion in November is the post signal-center building, a concrete-frame structure to cost $293,700.

By October, the Army plans to complete $300,000 in new facilities for the Army Field Forces Board No. 2 area. Included are additions to the field maintenance building, additional boilers, heating systems for shop buildings and macadam roads and parking areas.

In September, 12 storage magazines are expected to be finished at a cost of $378,736.

An addition to the Fort Knox water facility was recently completed at a cost of $123,479.

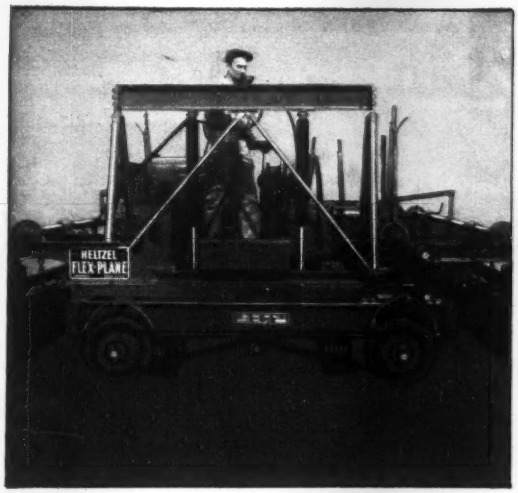
• **More to come**—Next year's building program includes $1,145,000 for improvements at Godman Air Force Base, located at the Fort.

While all these developments have been taking place, millions of dollars have been poured into new housing for the families of troops stationed at Knox.

More than 1,500 apartment units, constructed under the Wherry Act, were completed by last year but the demand was far from satisfied. Army officials said more than 2,000 Fort Knox military families were living in trailers this spring.

To help relieve the situation, the FHA last December authorized construction of 500 new dwelling units for the area and this spring authorization came through for construction of the first eight-story elevator apartment building in the U.S. under the Wherry Act. The $2-million building will be erected by Midwest Mortgage Co. and its affiliate, Fort Knox Construction Co. It will contain 180 efficiency apartments and 20 one-bedroom apartments.

This structure is to be located alongside a 500-unit project which was completed by the Algernon Blair organization of Montgomery, Ala., last April, five months ahead of schedule.



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CAREER MAN, Walter L. Greene, newly appointed head of FHA, has come up through the service. (ENR Photos by Compton)

Walter L. Greene sworn in as FHA head sees million-a-year pace continuing

In the hectic days at the end of last week's final session of Congress, one of the last things the Senate Banking and Currency Committee did was approve of Walter L. Greene as Commissioner of the Federal Housing Administration.

"I was afraid," said Greene, smiling, "that I would have to serve through an interim appointment."

Last week the swearing-in process was completed and Greene officially took office as the head of FHA.

However, he is no stranger to the office or its duties. For the last five years the quiet, dignified Greene has been Deputy Housing Commissioner. He was appointed Commissioner to succeed Frank Richards who resigned to enter the mortgage business in Washington, D.C.

• **No drastic changes**—Greene is confident that the good work of the FHA will continue for the years ahead.

"There will be no drastic changes in policy all at once," he said. "The FHA makes changes in policy constantly but gradually according to need."

Most changes, he pointed out, will be due to the needs of the mass builder of today. Greene looked back over the housing business to 1934 and compared it to 1952.

In 1934 the mass builder was rare or non-existent, according to Greene, but today the 1,000-at-a-time builder is not unusual.

He had a word of warning for the industry on that score. "Mass building can continue indefinitely," he said, "but they must stay in the low price bracket. It is easy to overbuild in the high-price range."

• **But some changes will come**—Al-

though he does not foresee any drastic changes in policy, Greene did agree that changes were bound to come.

The FHA manuals will remain looseleaf affairs so that changes can be made easily, he remarked.

Greene said that most changes in FHA requirements would come from the rapid advance in design and from new materials for building.

The FHA does not intend to approve or disapprove of materials, but Greene indicated that they would be tested and results of the tests transmitted to the field offices. This has been done with some materials.

Greene was a little dubious about new designs. The needs and acceptance vary so much from one section of the country to another that he prefers to leave problems of novel home design to the local field office.

"All we are interested in is the risk involved," Greene said. "If our field office, knowing local conditions thinks that the house will have good resale value it will approve of the design."

"Actually," he continued, "most of the work is done in our field offices and we here in Washington are only supervisors of their activities. State directors can originate the loan insurance and are to a large degree autonomous."

• **Present position**—Greene was satisfied with the job FHA was doing.

"Our field offices are keeping up with processing and, in fact, most cases are reported on within 7-14 days," he said. "The only shortage of manpower is in the Washington office."

The FHA earns, through its premium charges, at least three times as much as it costs the government to operate, he said.

The steps up . . .

Born in Owensville, Ky., Walter L. Greene's first venture was in the real estate business in Plant City, Fla. From that he entered into banking, serving as cashier and auditor in banks in various cities in Florida. In 1928 he was specializing in real estate investments and mortgages in Birmingham, Ala. Greene entered the FHA service as Assistant to the Director at the Birmingham field office. In 1937 he went to Washington and worked in the Underwriting Division rating risks. In 1947 he was appointed Deputy Commissioner.

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TWENTY-FIVE YEARS AGO, these were the first Freeman scholars. In addition to Prof. Winkel, who stands at the left, they are today (front row): Herbert N. Eaton, chief, hydraulic laboratory section, National Bureau of Standards, Wash., D. C.; John B. Drisko, research engineer, Stevens Institute of Technology, Hoboken, N. J.; Frederic T. Mavis, professor and head of department of civil engineering, Carnegie Institute of Technology, Pittsburgh, Pa. (Back row): Blake R. Van Leer, president, Georgia Institute of Technology, Atlanta, Ga.; Kenneth C. Reynolds, professor and head of department of general engineering, University of Southern California, Los Angeles; Murrough P. O'Brien, dean, College of Engineering, University of California, Berkeley; Loreng G. Straub, professor and head of department of civil engineering and director of the St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Minneapolis.

First Freeman scholars mark 25th anniversary

Every year since 1927 a few fortunate young engineering graduates have been granted Freeman Traveling Fellowships for advanced study in Europe. That the generosity and farsightedness of the late John R. Freeman in establishing the fellowships have also brought fortunate results to the profession and to engineering education can now be quite definitely shown by noting the present posts of the first group of seven young men who were chosen. All are leaders in engineering education, and each has contributed importantly to advances in the engineering art, more particularly in hydraulics, but not limited to this one field.

A photo taken of this group 25 years ago in Germany shows them in a classroom with Prof. Richard Winkel of the Hannover Technische Hochschule. It is the property of Prof. Frederic T Mavis, head of the department of civil engineering, Carnegie Institute of Technology and one of the group, who remarks that "on the 25th anniversary of the Freeman Traveling Fellowships it is appropriate to reflect on Dr. John R. Freeman the credit that is due him in engineering education and to be thankful for men like him. The seven original Freeman Fellows, who were young American engineers in Europe 25 years ago, have had an opportunity to pass on to other young men some of the spirit and encouragement they got from Dr. Freeman and the associations he made possible for them."

It is also interesting to recall that Engineering News-Record remarked editorially at that time (ENR Sept. 15, 1927, p. 414):

"The excursion of these young men into continental research is very hopeful. In the fellowships that he provided, Mr. Freeman is assuring a valuable experiment in engineering education. We may have to wait a decade or two to find out how these young men turn out and what they contribute to the art and science of engineering, but they are marked men now and their careers will be watched."

Now, 25 years later these men are still "marked"—no longer on the basis of their youthful opportunities but because there careers that have brought them to influential position.

Radcliffe gets top post on West Virginia roads

The appointment of Harry Radcliffe as West Virginia Road Commissioner effective early this month was announced by Governor Okey L. Patteson. Radcliffe succeeds Ray Cavendish who resigned to become Executive Director of the West Virginia Turnpike Commission.

The new commissioner is a native of West Virginia and received his education in West Virginia and Indiana schools. He is a Registered Professional Engineer, member of the West Virginia Society of Professional Engineers, the American Military Engineers as well as national highway associations.

Radcliffe celebrated his thirtieth anniversary with the commission this year. Beginning with the commission July, 1922, as chief of survey party in highway location, he has since held engineering positions in various divisions, being promoted to Administrative Assistant to the State Road Commissioner in 1946. In the capacity of Assistant to the Commissioner, Radcliffe had jointly carried with the Commissioner the many problems confronting the office.

Among the first projects the new commissioner will have to lead is the new 88-mi toll expressway between Charleston and Princeton at an estimated cost of $96 million.

HARRY RADCLIFFE, West Virginia Road Commissioner, appointed this month.

Bricklayer employers ponder action as strike continues in New York City

At the end of last week the Building Contractors' and Mason Builders' Association of New York, Inc., had not yet said what action they would take in answer to the ruling of the Construction Industry Stabilization Commission on bricklayers wages (ENR July 10, p. 26).

Two weeks ago when the CISC authorized another N. Y. brick contractor group (Associated Brick Mason Contractors of Greater New York, Inc.) to pay $3.55 an hour, it was expected that the mason builders would take some action.

The mason builders could appeal the case asking for a rehearing on their previously entered objections to the unilateral raise; or they could apply in their own behalf for the right to raise their scale to $3.55; or lastly, they could try to reach some sort of compromise by negotiation and arbitration with the union.

At week's end the most likely solution to the mason builders' dilemma seemed to be some sort of a compromise by negotiation with the union.

• **Dissenting opinions**—If the mason builders choose to ask for a rehearing they will probably base their case on the dissent of the industry members of the CISC.

Industry Member William J. Cour based his dissent on the action of the CISC in setting a wage rate for particular employers. It is his belief that the function of the CISC is to set area rates and the decision was remiss in not doing this.

Industry Members James D. Marshall and E. W. Dunn entered dissents to the decision for the following reasons:

• They pointed to the wide disagreement between the information furnished by the applicants and that furnished by mason builders.

• They declared that stabilization requires bargaining be by all the customary parties.

• They argued that Associated represented a minority of the employers in the area and that they should not set the rate for the majority.

• The increase granted will unstabilize the area.

• The commission's decision was hasty and ill-timed.

Wage contract approved

Last week the Wage Stabilization Board announced that it had approved a new general wage contract covering union construction craftsmen in southeastern Florida.

Lawrence Seibel, executive director of the WSB's Construction Industry Stabilization Commission, said the contract submitted to it for approval by the Construction Council of Dade County, Fla., and by contractors of the area, was approved by both the commission and the wage board.

• **Strike continues**—While the mason builders were pondering the next step, the walk-off—no one will call it a strike—of their bricklayers continued.

In an odd twist, mason builder spokesman declared that the effects of the "strike" were mitigated by the steel strike. Because of the steel strike many jobs would have had to shut down for lack of steel windows, structurals, etc., and thus the brick walkout is only felt where steel work has already been installed.

Seattle bricklayers reject pay increase

The bricklayers' union at Seattle, Wash., not only has rejected a contractors' offer of a 15-cent-an-hour wage increase but, fearful of the inroads being made into masonry construction by new materials and methods, has agreed to join employers in a program to promote the industry.

Now getting $3.30 an hour, the bricklayers decided, "It's for the industry's betterment to leave wages where they are for another year," said financial secretary E. J. Gill. "Two-thirds of our work is residential and homeowners would feel the pinch of any raise now."

Bricklayers in the Seattle area have enjoyed an enviable bargaining position since early in World War II, when many permanent barracks built by the Army and Navy employed masonry construction. Brick also long has been favored in school construction and, until recently, for industrial construction.

Engineers, architects and builders of the area have gone all-out for new methods, including the "tilt-up" method of concrete construction, leaving brick relatively out of the picture.

The largest warehouse project currently under construction in the area is using the "tilt-up" method, as was the largest previous project.

Mason contractors contend that reinforced masonry costs 10 to 20 cents a sq ft less than concrete.

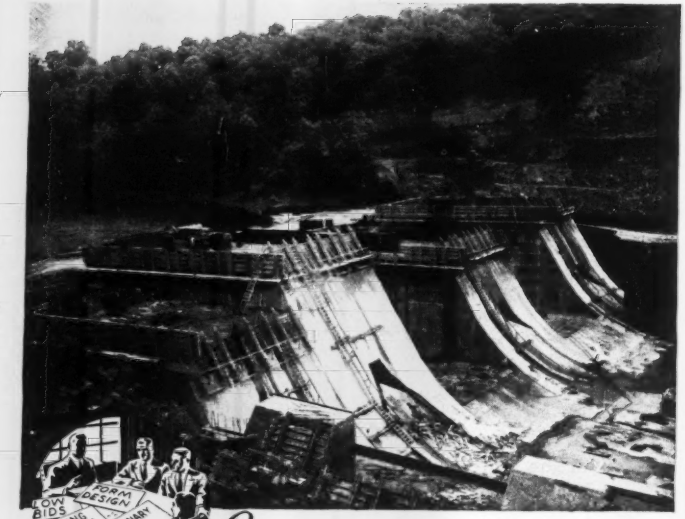
• **Salesmanship**—The bricklayers and the Mason Contractors Association are working on a plan which would raise perhaps $1,000 a month, through a 25-cent monthly assessment on each union member, and payment by each contractor of one-half of one percent of his gross payroll. This would be used to retain someone to "sell" masonry construction to architects, engineers and contractors, with perhaps a little advertising directed at the general public.

The industry's best customer at present is the homebuilder. Solid masonry construction is seldom employed but brick-veneer frame construction is popular.

• **Unemployed**—For the first time in a decade at this time of the year, a few Seattle bricklayers are on the "idle" list. In past years, if a bricklayer lacked a job, the union would simply suggest a project where bricklayers were known to be needed. It's not that simple today, although fewer than a dozen of the some 425 bricklayers in Seattle are on the idle list, and they are mostly the older men who like to pick their jobs.

In the lush days, bricklayers were not concerned with "public relations." From 1941 to 1949 their wages were supposed to be tied to the cost of living, in common with other building trades of the area, increasing from $1.60 to $2.495. In later years of the agreement, however, bricklayers actually were getting at least 13 cents an hour over the scale, and there was some belief that they were charging anything the market would bear.

In 1949 they "legalized" the then-prevailing $3.00 scale by abrogating the master agreement and concluding a separate agreement with the new Mason Contractors Association. The bricklayers thought that they had been kept down by the old agreement until their increases were below those of bricklayers in other parts of the country. This new scale, increased to $3.30 last year, has met general acceptance.



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Inter-union disputes bring on lawsuits

A counter suit has been brought by Long-Turner, contractors on the Ford Motor Company's aircraft plant at Clavcomo, Mo., against three unions.

The basic cause of the suit is a series of jurisdictional disputes which have led to strikes at the plant.

The contractor and the unions are also appearing before the National Labor Relations Board in Kansas City, Mo., under Mrs. Margaret Fassig.

The contracting firm is a joint venture of Long Construction Co. of Kansas City and Turner Construction Co. of New York City. The defendant unions are: Local 533 of AFL Pipe Fitters; Local 541 Teamsters and Chauffeurs; and Local 124 International Brotherhood of Electrical Workers.

The hearings before the NLRB are being conducted under a section of Taft-Hartley which directs NLRB to hear and determine cases involving a charge of unfair labor practices.

• **Union lawsuit**—Last month the teamsters union brought suit for $100,000 against John C. Long and Robert Long of the Long-Turner firm in federal court.

The damage suit claims that the Longs deprived a large number of workers of employment as a result of "wrongful conduct" and contract violation.

O. L. Ring, spokesman (and president) of the union, said that the union's contract reads: "The union reserves the right to strike any job whenever the contractor on said job violates or refuses to assign work in accordance with decisions of record, national in scope, as set out in the Green Book of Jurisdictional Awards."

• **Contractors' problem**—The construction firm is endeavoring to clarify the jurisdictional disputes which have led to strikes over who is to unload various materials on the Ford project.

While union representatives and employers (the prime as well as subcontractors) have many times tried to iron out the disputes, craftsmen and teamsters have had a continual dispute over the matter of loading and unloading materials.

Piledrivers return

Northern California AFL pile drivers went back to work two weeks ago ending a strike more than 2½ months long that had tied up some $450 million worth of construction.

CISC brands two strikes as purposeless

Two strikes last week demonstrated how misunderstanding and frustration can erupt into useless and purposeless work stoppages, according to a spokesman for the Construction Industry Stabilization Commission.

One of the strikes was a one-day stoppage in Miami protesting against lack of wage raise permission.

The other, rife with personality clashes, was at Paducah, Ky., where the F. H. McGraw Co. was building the $500-million atomic energy plant (ENR July 10, p. 28).

Here are the stories and the reasons given by the CISC for the labels—"purposeless" and "useless."

• **Miami strike for one day**—Construction throughout Miami, Fla., was halted July 3 when nearly 20,000 union workers walked off their jobs on a one-day protest strike against WSB refusal to grant wage increases.

Dennis Murphy, official spokesman for the Miami Building Trades Council, said the decision was made at a meeting of the organization earlier in June.

The union men, who are engaged in every phase of construction, met in Dinner Key Auditorium and staged a protest rally.

Core of the council's walkout decision, Murphy said, is WSB refusal to approve two wage increases requested last February and March.

"The Miami Industry Council (a board of seven men representing labor and seven men from management) met early this year and approved a 10-cent hourly increase for all these workers," Murphy said.

But Murphy said the WSB, after having been asked several times, has refused to come to a decision on the wage increase requests.

The major trades which take part in the protest will also take part in deciding what course of action to take to speed the WSB decision.

• **CISC**—The application filed by the Miami Trades Council included most of the trades and crafts.

Some of the trades, said the CISC spokesman, were within the formula and some of them were above the allowable formula. All of the increases requested were on the one application.

In the case of the raises that were above the allowable formula, authority rests solely with the full Wage Stabilization Board to grant or disallow them.

The CISC turned the application over to the WSB, but before it could be acted upon, the trades council called the strike.

• **Strike at Paducah**—The Paducah atomic energy plant, plagued by seemingly endless labor troubles, last week witnessed the 105th work stoppage since January, 1951.

The strike started June 26 and was settled July 3. More than 20,000 men were idled during the week.

The strike was called by about 4,500 members of the Paducah AFL labor pool, apparently because of dissatisfaction with overtime and retroactive pay and with the leadership of Evan Dale, chief of the labor pool.

Dale branded the strike as unauthorized but the 20,000 odd construction workers at the plant refused to cross the laborers' picket lines.

The pickets carried signs saying, "Dale must go." They expressed dissatisfaction for what they charged was his failure to seek overtime and retroactive pay when the Construction Industry Stabilization Commission was asked to approve pay raises for the laborers recently.

On the day they walked out, the Construction Industry Stabilization Commission approved a 15-cent-an-hour pay raise for some laborers in western Kentucky and southern Illinois, making the scale $1.80 an hour. But for most it approved only a 10-cent-an-hour raise, making the scale $1.60.

Dale charged that the strike was caused by reports that the commission had denied these wage increases. He said the reports were circulated by agitators, using fake copies of telegrams to bring about the work stoppage. He thought that Communist infiltration may have caused the trouble.

Officials of F. H. McGraw & Co., main contractor for the half-billion dollar job, said they had not seen or heard of the fake telegrams.

Terms of the settlement that sent the men back to work July 3 were not announced. A brief flareup of disorder marked the back-to-work movement.

Fifty automobile loads of Illinois men crossed the picket line and filed work applications as laborers. One picket, who allegedly hit one of the cars with a stick, was arrested on a charge of breach of the peace.

Pickets were massed on the road at the time, armed with sticks, clubs and tool handles.

Eight state policemen and two deputies from the McCracken (Paducah) County Sheriff's office were on hand to maintain order after the strikers labeled the Illinois workers as "strikebreakers."

Throughout the strike, the AFL-Paducah Building Trades Council had labeled the walkout as illegal.

Since January, 1951 there have been 50 strikes at the main construction site, 34 at the Joppa, Ill., Electric Energy, Inc., plant under contract to Ebasco Services, and 21 at the Shawnee TVA project. The Joppa and TVA projects each will furnish one-half of the power required to run the atomic plant.

• **CISC reply**—The CISC spokesman said he did not know what the personality clash between Evan Dale and his laborers was about, but he did comment on the wage raises.

The application for wage raises was filed, acted upon and duly granted.

When the strike started someone called to ask about certain shift premium pay for which the men were striking. The CISC examined the application and found that the premium pay in question had never been applied for.

Surely, said the spokesman, this was a purposeless strike.

Kentucky local union law confused by two actions

The position of the International Union of Operating Engineers, AFL, with respect to a new Kentucky state law was uncertain last week following two legal developments.

In Marshall County the IUOE was indicted June 26 by a Grand Jury for violation of the law which requires unions to charter a local in the state.

But in Louisville, Circuit Judge Macauley L. Smith ruled July 3 that the union is not violating the law.

The disputed piece of legislation was passed by the 1952 Kentucky legislature and was avowedly aimed at the IUOE. It requires every international union with 100 or more members in the state to charter at least one Kentucky local.

The Marshall County Grand Jury action was backed by union members in the western Kentucky defense area which is under the jurisdiction of the IUOE office in Evansville, Ind.

Judge Smith's ruling in Louisville held that the IUOE local in Louisville satisfied the requirements of the state law.

Southern California strike continues as AGC sues member who capitulated

Negotiations continued this month between Southern California contractors and the AFL Ironworkers and Operating Engineers, with no apparent signs of settlement despite the efforts of Federal Conciliator Earl J. Ruddy.

Estimates of heavy construction projects stymied by the strike range from $250 million up. Navy headquarters in San Diego reports upwards of $100 million stalled in its projects alone. Most freeway work in the Los Angeles area has halted completely.

Associated General Contractors—who are conducting negotiations along with the Building Contractors Association—have brought a $1.2-million suit against an AGC member for violating the association's by-laws by entering into separate contracts with the two striking unions. AGC also accuses the company—Herz Paving Co. of San Bernardino—of failure to comply with a resolution calling on all members to refuse to give employment to ironworkers and engineers on any jobs. The two trades struck only scattered projects, beginning June.

Joining with AGC in the suit is the Asphalt Paving Materials Co., which alleges that it has caused loss of business when Herz supplied paving materials to San Bernardino County that had been ordered from Asphalt Paving and which Asphalt Paving was unable to supply because of the labor situation.

The contractors have offered the two unions the same 19-cent-an-hour increase that was accepted by the carpenters, cement masons, teamsters and laborers. Last announced demand by the engineers and ironworkers was for 28 cents increase plus travel time subsistence, health and welfare plan and other fringe benefits.

• **Northern California**—In Northern California AFL Plumbers in Oakland struck for one day (6-30) to win a 25-cent-an-hour wage increase, effective on WSB approval.

Agreement was also reached on employer contribution of 7½ cents an hour to a health and welfare fund, a provision that had been included in terms of last year's contract.

Meanwhile, a suit filed in federal court in Sacramento by 11 plumbers union locals in California's Central Valley charging breach of contract by the employers on the health and welfare fund issue was settled out of court.

The agreement provides for retroactive contributions to April 4, when the CISC endorsed such a plan, or to Jan. 1 if CISC approval can be gained. The stipulation provided that the issue would go to trial again if the Jan. 1 date is not approved, however.

In another labor development in the Northern California area, it was revealed that a clause of the operating engineers contract with the AGC provided that in field survey work certain classifications of contractor's engineers are to be union members. These include instrument men; the chief of the survey part, the head chainman; rodman and grade setter; and the rear chainman. Inclusion of this provision has until this year been resisted by the AGC. Local engineers believe it is a first step toward unionization of subprofessional employees of all types of engineering and contracting organizations.

NLRB upholds pre-glazing ban by union

The Joliet (Ill.) Contractors' Association, which has been fighting a union ban on pre-glazed building materials since 1948, last week lost its case before the NLRB.

Even though the board ordered Local 27 of the AFL Glaziers Union not to use its by-laws to encourage secondary boycotts, the decision leaves the pre-glazed ban undisturbed and sanctions union refusal to supply glaziers to members of the association.

The case went to NLRB on secondary boycott charges as a result of union attempts to enforce its by-laws and rules. The union forbids a member to glaze sash, except on the construction site, or to work for a contractor who does not do all his or to work for a contractor who does not do all his glazing work on the job site or who does not use union members to do such work.

In fighting the ban, contractors charged the by-laws were a separate violation of Taft-Hartley which forbids "inducing" employees to conduct secondary boycott strikes. The contractors presented several incidents in which glaziers either refused to start or finish a sub-contractor's job because the general contractor was using some pre-glazed materials.

The board said the by-laws alone were not illegal, but had a legitimate purpose: to make as much work as possible for Joliet glaziers. Furthermore, since men can't quit before they are hired, or stop work before they start, the board ruled the Taft-Hartley definition of a strike was not met by union refusal to furnish workers to contractors who used the banned materials. Taft-Hartley says a strike is "a concerted stoppage of work."

• **One down**—In just one instance, the board found sufficient evidence of actual encouragement to issue a "cease-and-desist" order against the union. That incident involved men already on the job who quit on advice from a union leader when they discovered pre-glazed material being used. It was this episode that moved a three-man majority of the board to direct the union not to apply its by-laws to encourage strikes.

Two felt the entire complaint by the association should have been dismissed. It was the only place in the decision where there was any disagreement. Every other point was decided by a unanimous vote of the five-member panel.

Barring further court appeals, it seems likely the union ban will remain an effective thorn in the sides of Joliet contractors. Since the board has refused to find secondary pressures in the major part of its program, Local 27 is sure to press further its insistence that all glazing be done by union members on the construction location.

Denver WSB cites 4 more

Four more Denver building contractors have been named by a WSB enforcement commission in wage control violation complaints.

The total amount of wage overpayments by the four firms is estimated at well over $11,000. During the periods of violation, the illegal payments—legal rate plus the excess wages paid—by the four contractors totaled $161,491.

Arcade Plastering Co., Edwards and Milow, Peter J. and Albert Anderies, and the Chapman Plastering Co. were named in the complaints.

Highest hourly overpayments were for lathers and lather foremen. All companies involved paid their lathers $3.50 an hour when the legal rate was $3.00.

Hearings before the regional commission are scheduled for August 2 and 9.

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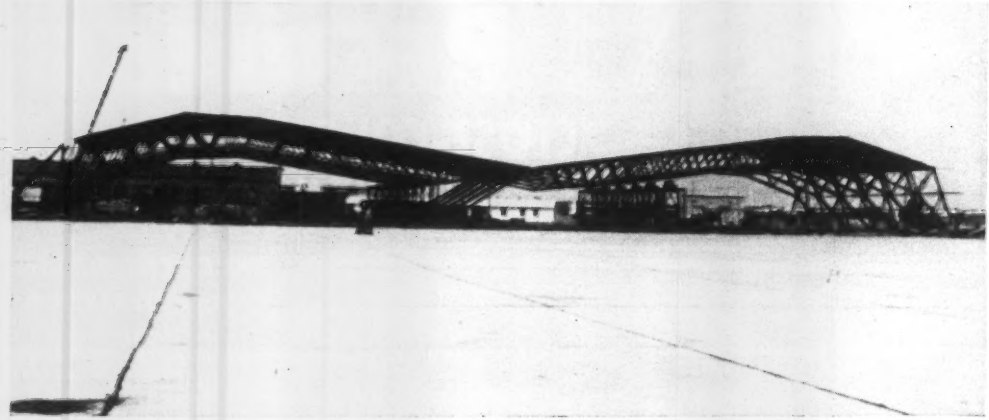
WRITE FOR BULLETIN—Peerless Bulletin No. B-159 describes and illustrates these close-coupled turbine pumps completely. Shows how they can be applied not only to cooling tower service but to other water handling problems, such as pumping from sumps, settling basins, reservoirs, and surface water sources.



CENTER HINGES start up with aid of auxiliary bars, move rest of way as end supports are drawn toward each other.

Hinged-arch buildings raised with winches

SCAFFOLDING, cranes, derricks and other hoisting equipment are replaced by winches in an erection procedure developed for long-span hinged-arch steel structures that is now being introduced in the United States.

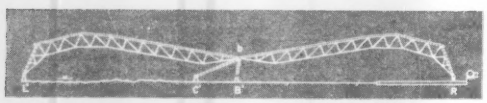
Complete buildings are assembled on the ground and then lifted to final position by forcing the arch supports toward each other. During the lifting operation, apron walls are put in place, leaving only the door and lower part of the rear wall to be assembled after erection.

That in a nutshell is the quick-assembly method devised by E. M. Huennebeck and used in Germany during World War II. American engineers gained some experience with the method in 1951 during the erection of a 223-ft wide aircraft shelter for the U. S. Air Force at the Rhein-Main airdrome in Frankfurt, Germany (see accompanying table).

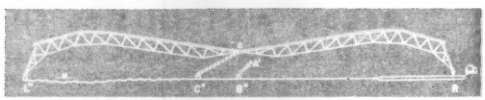
• **Advantages**—Depending upon size of the building erected by the Huennebeck method, varying amounts of time and equipment and labor costs are saved, according to the American sponsors. Assembly of the Frankfurt hangar required 10 days, but the actual lifting took only 2½ hours. During the war specially trained German teams succeeded in assembling and lifting 130-ft wide 100-ft deep structures in less than 24 hours.

STEP 1—Site is graded, foundations and door sill laid out, and trenches prepared for cables. Tracks for skids are placed.

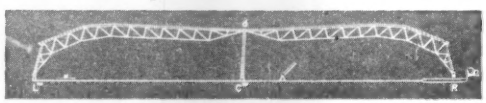
STEP 2—Three-hinged arches are set on ground. Right support is hinge-connected to final footing, center hinge rests on ground, left support on skid. Bracing and purlins are put in place, roofing and siding fastened down. Erection winches are placed next to right footing. Auxiliary bars AB and AC are under all arches. Tie ropes is taut between winch and B, slack between B and left skid which is denoted as L.



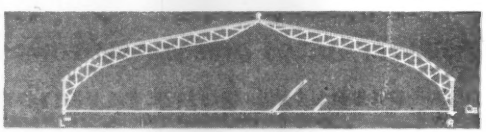
STEP 3—Winches for all arches move point B to B′ lifting center hinge to b. Left skid moves slightly. Tie rope from winch to C′ becomes taut, remains slack from C′ to left skid.



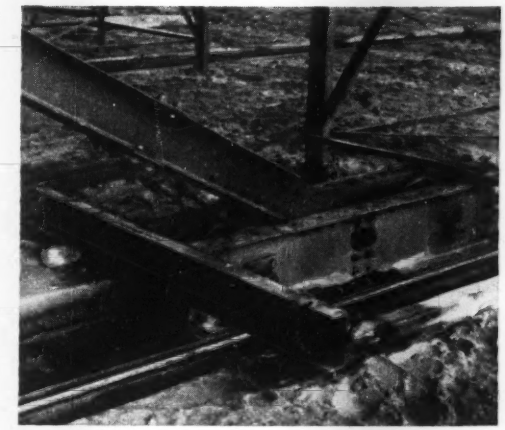
STEP 4—Winches move points C′ to C″, lifting arches to e. Auxiliary bar A′B″ drops out automatically. Left skid travels a slight bit farther to L″.



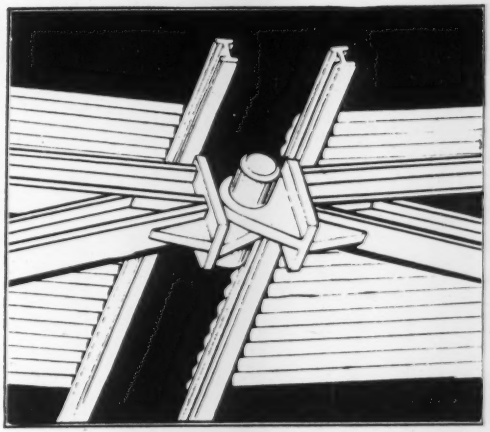
STEP 5—As winch operation continues, C″ moves to C‴ and tie rope between C‴ and left skid become taut. Center hinge reaches point d and second auxiliary bar drops out.



STEP 6—Winches pull left skid to final position. Arches are raised to ultimate position e. Left hinge is anchored to foundation. Tie rope is attached to right hinge support and erection is complete. Rear and front walls are assembled in place, doors and windows installed.



MOVING HINGE is attached to skid which slides in track. The other arch support is stationary.



CENTER HINGE pin construction allows smooth movement and permanent closure.

In general, the longer the span the greater are the advantages of the winch method. But Horst Orbanowski, vice-president of the Kurt Orban Co. of New York City, which is marketing the Huennebeck method here, states that the erection procedure offers little advantage for spans up to 60 ft.

• **Design**—Members of trusses can be either rolled sections or high-tensile seamless steel tubes. The latter have been used predominantly in Europe, while rolled sections are expected to be used here. Variety of available sections governs the choice: Many rolled sizes, few tubes are fabricated in the U. S. In Europe, the reverse is true.

• **Erection**—The accompanying diagrams detail the erection procedure for a three-hinged structure. In brief, the center hinge is raised to a pre-determined height by pulling the auxiliary bar skids toward the winch by means of a tie rope. At this height, the last auxiliary bar drops out and tie rope between winch and farthest hinge skid becomes taut. As this skid is pulled toward the fixed hinge, the center hinge is lifted into final position.

Lifting can be facilitated somewhat by providing hinges at the quarter points of the arch. In this case the erection sequence is as follows:

First, the quarter-point hinges are raised to a pre-determined height as the winches power tie ropes that engage auxiliary-bar skids. Then the tie rope engages and pulls the movable hinge in so that the auxiliary bars drop out and the quarter-point hinges are forced up farther to closure. At this point, the tie rope between winch and hinge skid becomes slack again, and the procedure follows that detailed in the diagram.

• **Costs**—Actual cost data are not available at this time because no structure has yet been erected in this manner in the U. S. But recent estimates are of some value. The Kurt Orban Co. has quoted materials for a 197-ft wide 200-ft deep hangar in Seattle, Wash., at $2.96 psf. Erection costs are figured at $0.70 psf, making a total of $3.66 psf for this 39,400-sq ft hangar.

The materials costs are based on German factory prices plus ocean freight and duty charges. Trusses are to be of seamless steel tubing.

Another, and even lower, estimate has been given to the European Command of the U. S. Air Force for ten hangars to be erected in France and northern Africa. The price for the ten 35,300-sq ft structures, including erection, is $2.18 psf (again employing German materials).

KEY FACTS FOR U. S. AIR FORCE HANGAR AT FRANKFORT

DIMENSIONS:

Span 223 ft	Door opening 190 ft
Depth 101 ft 6 in.	Height of door 39 ft 4 in.
Height 58 ft 4 in.	

STEEL CONSTRUCTION (Rolled sections)

Trusses, bracing, purlins, wall framing (14.5 lb/sq ft)	165.0 tons
Hangar door with accessories (manually operated)	27.5
Accessories	3.5
	196.0 tons*

ROOFING AND SIDING (Asbestos cement sheeting)

Roofing	29,200 sq ft
Siding	6,600
	35,800 sq ft

ASSEMBLY AND ERECTION

Steel construction and door	4,400 man-hr
Roofing and siding	1,000
	5,400 man-hr
Time of assembly	10 days
Time of actual erection	150 minutes

* By employing high-tensile steel tubes, the weight could have been reduced by 30 to 40 tons.

EARTHMOVERS cut a wide swath last year but asphalt pavers and rollers are rapidly taking over the big job for this year.

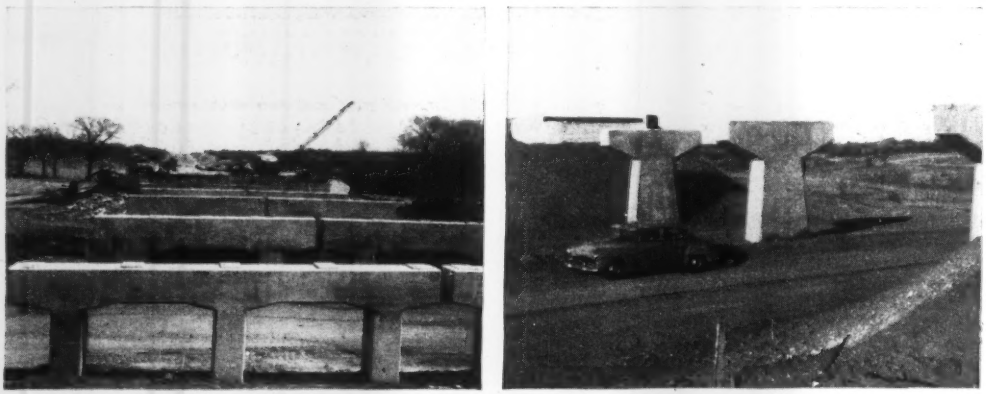
Turner Turnpike hits the home stretch

FOUR YEARS of promotion and planning, plus two years of concerted construction on Oklahoma's first toll highway will begin to pay off at the end of this year or early next spring. By that time the Oklahoma Turnpike Authority expects to have its Turner Turnpike completed and in operation.

To do this the Authority has collected the largest aggregation of grading, paving and bridge contractors ever assembled on a highway project in that part of the country. All total, there will be 43 contractors on the job, handling 83 construction contracts. Some have more than one contract; the most ambitious one holding five grading, two bridge, and two paving contracts. Construction employment is expected to hit a peak of nearly 3,500 workmen about the middle of this month.

• **What the turnpike does**—Named the Turner Turnpike after Oklahoma's former governor, Roy J. Turner, who actively promoted the project, the 88-mile, four-lane divided toll highway connects the state's two largest cities. It starts in the outskirts of Oklahoma City near 120th St. and Northeast Blvd., and terminates near 51st St. in Tulsa at the connection with the Oklahoma State Highway Department's new million-dollar Arkansas River Bridge.

Freeway construction totaling 3½ miles in Tulsa and about 11 miles in Oklahoma City, to be completed this year by the State Highway Department, will speed through traffic past those two cities, while local traffic



TWIN SUBSTRUCTURES carry the turnpike's four-lane superstructures and 15-ft median over existing roads (at left), while web-wall bents (at right) carry existing two-lane roads over the turnpike.

will branch off to the downtown areas.

The new turnpike will cut 13.5 miles off the present 103-mile distance between the downtown areas of Oklahoma City and Tulsa by U. S. 66. It will save 58 minutes for the motorist traveling at 50 mph and 50 minutes for a truck at 45 mph.

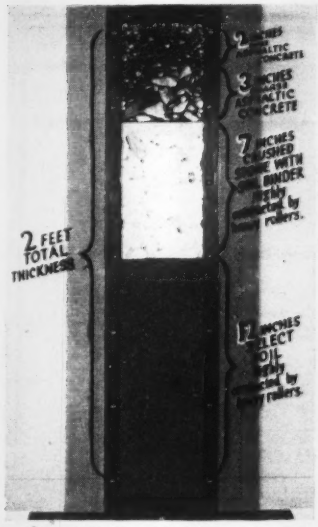
Old U. S. 66 lacks all the elements of a modern highway. It is narrow and rough, has 87 curves of 4 deg or greater, seven miles of grades from 4 to 7%, and 29 bridges with roadways less than 24 ft wide. The new highway will have no curve over half a degree in angle and no grade over 3%.

• Slow start; fast finish—Turner Turnpike was slow getting started, but it is being completed in a rush. It took twice as long to get ready to start construction on the turnpike as it will to build it.

Although Oklahoma's Toll Highway Act was adopted by state legislative action in 1947, proceeds from the sale of the initial $31 million of bonds were not received until November 1950. Additional bonds totaling $7 million were sold on June 2 of this year to complete the financing of the turnpike.

Construction of the entire project will take about two years. The first grading contract was awarded Dec. 19, 1950. Grading, drainage and bridge construction were advanced substantially last year. Paving was started this spring, and the entire project is expected to be finished by the end of this year if the bridgework is not too long delayed by the steel strike.

• Many contracts let—A state law limiting grading and incidental drainage structure contracts to $500,000 resulted in 26 such contracts being awarded for 84.6-miles of this part of the work. The last construction contract (other than for toll booths) was let May 19 (ENR June 12, p. 122).



PAVEMENT SECTION for the twin 24-ft roadways includes 5-in. of hot-mix asphaltic concrete laid in two courses; 7-in. base of crushed stone and soil binder; and 12-in. of highly compacted select soil.

Whether this limitation on the size of contracts resulted in a savings is a moot question. Some engineers connected with the project believe better prices would have been obtained had they been able to award larger contracts. And obviously, larger grading contracts would have reduced the amount of paper work and inspection forces.

Grading contracts vary in length from 2.0 to 6.0 miles. Contract prices for roadway excavation—which cover all types of material including rock—range from 20c to 65c per cu yd; with an average of 30c.

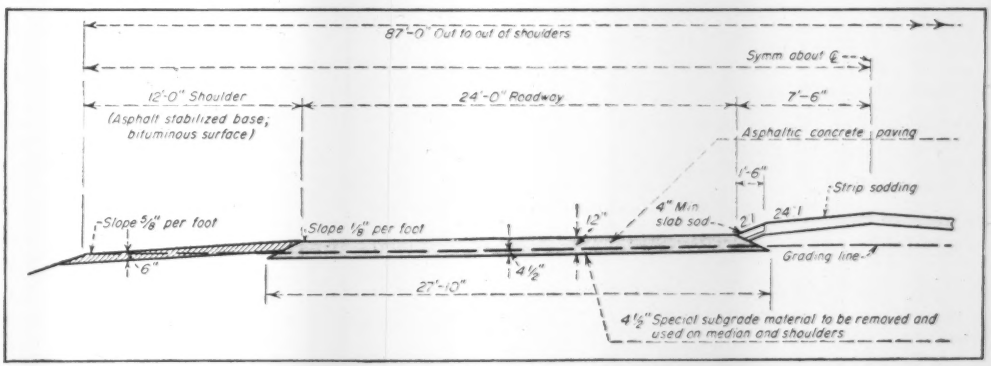
• $10 million for grading—The 26 grading contracts total $10,602,000. Average cost of grading and drainage is $125,180 per mile. All but five of the contracts are over 50% finished, and several are completed. Fourteen contractors secured the 26 contracts. Seven contractors got more than one contract each. One contractor got five contracts for 12.7 miles of grading and incidental drainage structures at a total cost of $1,838,000.

The grading contracts also include placement of a 16½-in. layer of highly compacted select soil which supports the pavement subbase and stabilized shoulders. To expedite the grading work, this select soil was finished to a continuous line from shoulder to shoulder of the 87-ft wide embankment, and to within 7½ in. of the top of pavement.

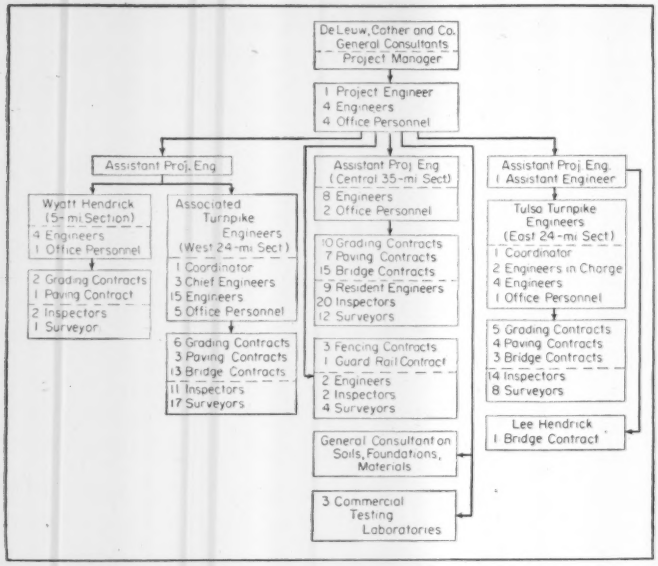
Paving contractors will remove 4½ in. of this material to permit construction of the 7-in. crushed rock subbase and 5-in. asphaltic concrete pavement. The select material removed will be used to build up the median strip and to construct the stabilized shoulders.

This preparation of the subgrade to receive the subbase is underway on all grading contracts. Some contractors are now laying the crushed rock for that base. They will be ready to begin laying the bituminous concrete by the end of July.

• $8 million for bridges—There are 66 bridges of over 20-ft clear span on the 88-mile turnpike, costing slightly over $8 million. All are designed for the AASHO live load of H-20-S16. In general, they are rolled steel beam and concrete deck spans; both continuous and simple span designs. The simple spans contain shear connections between deck slab and stringers,



HALF SECTION of the turnpike roadway. Cuts and fills are graded to a neat line, 87 ft shoulder-to-shoulder, being topped with 16½ in. of selected material. Paving contractors use 4½-in. of the special subgrade material to build up the median and shoulders.



FIELD ENGINEERING and inspection on the fast moving grading, paving and bridge construction—strung out along the entire 88-mile turnpike—is being furnished by four consulting firms, employing 150 engineers and inspectors on the job.

forming a composite design section.

No penny-pinching was practised in designing the bridges at the expense of providing adequate roadway width. Bridges over 100-ft in length carry two 27-ft roadways. Those under 100 ft, carry two 32-ft 6-in. roadways. The 15-ft median is continued across all structures carrying the turnpike over streams or other highways.

Structures carrying other roads over the turnpike, have 18-, 24- or 28-ft roadways. They are designed for a standard H15 live loading on county section-line roads, and for H20 or H20-S16 live loading on state and federal highways.

All bridges carry a single precast concrete rail on poured-in-place concrete posts. Top of rail is 1 ft 9 in. above the top of a 9-in. high curb. Handrails are set back far enough on the overheads to provide an 18-in. safety walkway on each side of both roadways. In general, separate substructures carry the twin decks of the turnpike structures.

Thirty-nine contracts for the 66 bridges totaling $8,122,000 were awarded to 21 contractors, between April 25, 1951 and May 13, 1952.

As this is being written, the steel strike has made it impossible for five of the major bridge contractors to get reinforcing steel. As a result, delays on the bridgework may put the opening date over into 1953.

Other major construction contracts include one $488,650 contract for all guard rail on the project, and a $97,500 contract for erecting fencing on the entire turnpike, using material purchased by the Turnpike Authority at a cost of $153,000.

• **Small drainage structures**—Precast concrete pipes up to 60-in. dia. are used for incidental drainage structures. For larger openings, reinforced concrete boxes are used, either single, double or triple. There is one quadruple, 14-ft dia multiple culvert on the project, with an average top length of 215 ft for each barrel.

In designing the drainage structures, the turnpike designers paid particular attention to erosion-control of abutting land. Corrugated metal pipes are used for flumes on the backslopes, while inlet structures for underdrainage of the turnpike are set high enough to arrest scouring in the bottom of the approach channels—which was pretty well advanced in several locations.

AGGREGATE GRADING FOR PAVING

For bottom 3 in. of asphaltic concrete

Sieve size	% passing
1½-in.	100
1-in.	90–100
½-in.	65–80
#4	40–55
#10	30–45
#40	20–30
#80	10–20
#200	3–7

Asphalt content 4.5 to 6.5%

For the top 2 in. of asphaltic concrete

Sieve size	% passing
¾-in.	100
½-in.	90–100
#4	55–80
#10	40–55
#40	20–37
#80	10–25
#200	4–8

Asphalt content 5.0 to 7.0%

• **Controversy over paving**—There was, as would be expected, a lively fight between the asphalt and cement interests over building the 88 miles of twin 24-ft pavements of asphaltic concrete or portland-cement concrete.

The turnpike engineers wanted to use the type of pavement most economical to construct, with due consideration being given to pavement strength and maintenance costs.

The consulting engineers prepared five alternate pavement designs—two of portland-cement concrete and three of bituminous concrete (ENR Sept. 20, 1951, p. 25). All five pavement sections were designed for a 28,800-lb axle load (12,000-lb wheel load plus 20% impact).

The two rigid-type pavement designs called for an 8-in. or a 9-in. portland-cement concrete slab on a 4-in. or 3-in. sand cushion, respectively.

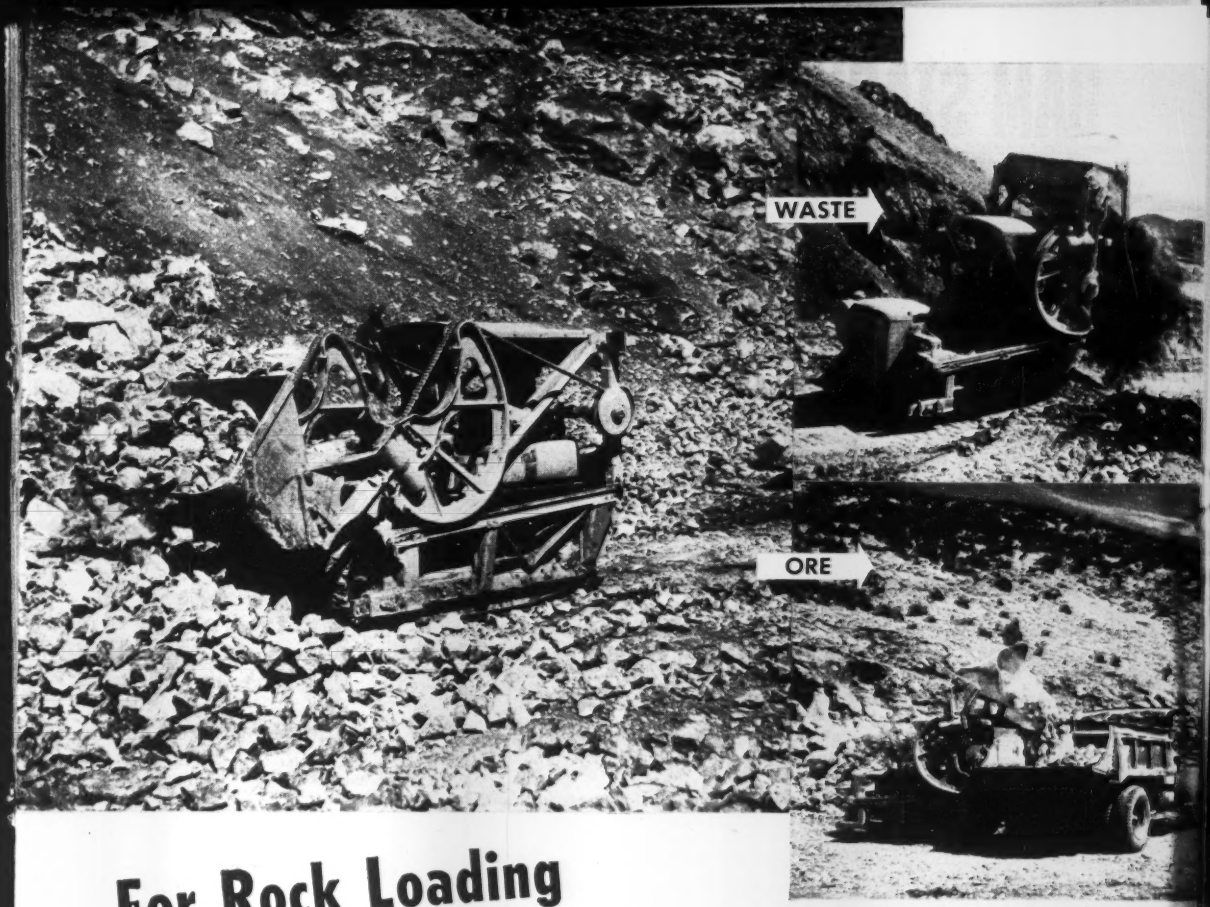
The three flexible-type pavement designs specified: 5-in. of asphaltic concrete on a 7-in. stabilized base (crushed stone with soil binder); 6-in. of asphaltic concrete on 6-in. of stabilized base; or 8-in. of asphalt concrete on a 4-in. stabilized base.

In making these designs the consulting engineers sought to make them as closely comparable as possible.

All five designs called for a 12-in. subbase of highly compacted select soil beneath the pavement, and extending over the full 87-ft width of subgrade.

Road shoulders are 12-ft wide, with a 6-in. asphalt stabilized base course or crushed rock stabilized aggregate base, topped with a 10-ft wide single bituminous surface adjacent to the pavement. The dual 24-ft pavements are separated by a 15-ft median of strip sodding, raised 9-in. above the pavements.

By calling for bids on the five alternate designs the turnpike engineers believed the question of minimum construction costs would be automatically settled. The other question—probable future maintenance costs



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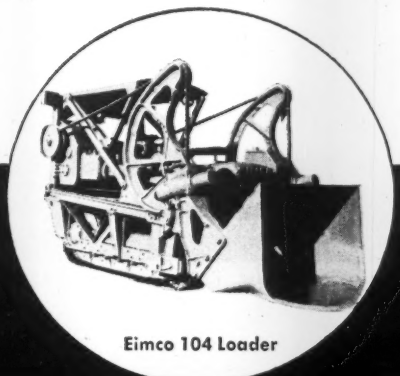

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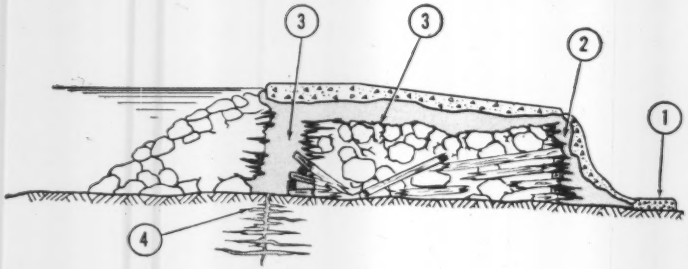
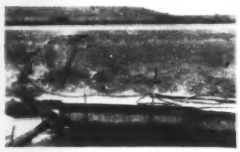
DAM STABILIZATION SOLVED BY PREPAKT



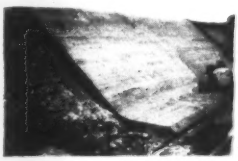
SECTION SHOWING AREAS PENETRATED BY INTRUSION GROUT

View of dam showing downstream deterioration and leakage.

Downstream face showing undercutting of dam toe.



Prepakt berm after placement showing leak channeling pipe.



Finished Prepakt Concrete spillway face.

The York Haven Dam of the Metropolitan-Edison Company, built early in this century across the Susquehanna River, presented a serious leakage problem caused by deterioration of the dam structure. INTRUSION-PREPAKT methods and materials have successfully stopped this leakage and thoroughly stablized this important structure.

How this was done is best shown by the sectional drawing above—how INTRUSION grouting and PREPAKT CONCRETE effected permanent stoppage of leaks.

1. A PREPAKT CONCRETE berm was placed parallel to the toe of the dam to form a closure that concentrated leaks into channeling pipes which were later closed.

2. INTRUSION grout, forced through the downstream face (and behind the PREPAKT berm) solidified the downstream section, filling all voids in this part of the original timber and rock structure.

3. With flow through the dam stopped, silt and foreign matter were jetted out and all internal voids filled with Intrusion grout under pressure. The high penetrability of Intrusion grout insured a tight permanent cut-off in the forward section of the dam, plus strength and stability.

4. After solidification of the dam superstructure, grouting holes were drilled to bedrock where additional INTRUSION pressure grouting sealed all bedrock seams.

These INTRUSION-PREPAKT methods and materials resulted in stopping the leaks and in complete rehabilitation of the dam.

Full information on the advantages of INTRUSION-PREPAKT can be obtained from your nearest PREPAKT representative or from the Home Office, Union Commerce Bldg., Cleveland, Ohio.

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of the two types of pavement—was open to considerable debate.

• **The question of maintenance**—There wasn't much data available on maintenance costs of portland-cement concrete versus hot-mix asphaltic concrete on flexible bases, on Oklahoma highways, since the latter type was only about 5 years old. To arrive at as fair a comparison as possible, Turnpike Manager H. E. Bailey contacted 15 state highway departments to see what their experience had been in maintenance costs.

Results of this survey indicated that maintenance costs on portland-cement concrete pavement and hot-mix asphaltic concrete pavement would be about equal.

• **Asphaltic concrete won**—Results of the first pavement letting, and all succeeding ones, were that the low bid for the asphaltic concrete pavement was substantially less than the low bid for portland-cement concrete.

Contracts awarded on the 82.5 miles of dual 24-ft pavement let last year showed a saving of $1,160,000 by using asphaltic concrete.

The reduction in annual interest charges represented by this large saving, the turnpike authority points out, will provide a considerable margin for maintenance work even though costs should be higher than now appears probable.

Contracts for paving the entire turnpike totaled to $9,632,400. All were for the alternate design calling for 5 in. of asphaltic concrete on 7 in. of highly compacted crushed-stone base with soil binder.

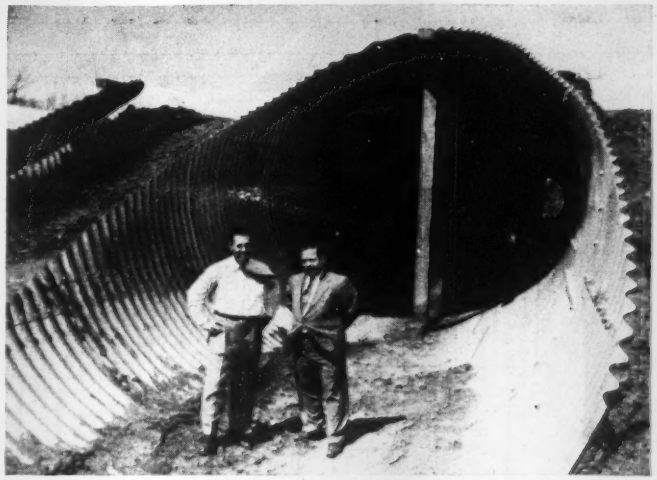
The average cost per mile of this pavement, including 10-ft shoulders and 15-ft median strip was $113,500.

The 5-in. hot-mix asphaltic concrete pavement is designed for a density of 92 to 96% and it has a stability of at least 40% by the Hveem method. Aggregate gradations for the pavement are given in table on p. 40.

• **Stabilized base**—The 7-in. stabilized base course also is compacted to at least 95% of standard Proctor density. It contains graded, crushed aggregates, sand, stone dust and soil binder. At least 40% must be crushed material retained on a No. 4 sieve, while 80% or more of the soil binder must pass a No. 4 sieve. The base course is road-mixed, moistened, and compacted under steel rollers.

The 12-in. of special subgrade material between the compacted embankment and the stabilized base course must have "a California Bearing Ratio of 10 or more, and a plasticity index of less than 9." It is required to be compacted to at least 95% of standard Proctor density.

Embankment side slopes are 1 on 4 for fills up to 10-ft, and 1 on 2 above 10 ft. Backslopes are 1 on 2. Embankments are compacted to at least 90% of standard Proctor density.



TURNPIKE ENGINEER Freeny (at left), and DeLeuw & Cather's engineer Fletcher, are dwarfed by the size of a quadruple 14-ft dia culvert under the turnpike.

• **Relocation saved $400,000**—The turnpike designers made another substantial saving by relocating the turnpike through Sapulpa (population 13,000). Originally the turnpike was to have been located adjacent to the business district. When the project costs started to soar above the original $31 million bond issue, the designers looked around for ways to save more money.

They convinced the local interests that to run the turnpike through downtown Sapulpa, as originally proposed, would not be worth the added cost. As finally located it will pass through the outskirts of the city—at a net saving of $400,000.

• **Engineers in charge**—The Oklahoma Turnpike Authority, under Manager H. E. Bailey, has a compact field and office force totaling 27. W. D. Hoback is chief engineer, and M. C. Cline, comptroller and purchasing agent. Design engineers include H. C. Freeny, W. A. Wood, and L. S. Rawlings. Field engineers are A. L. Forrester and F. E. Hathaway.

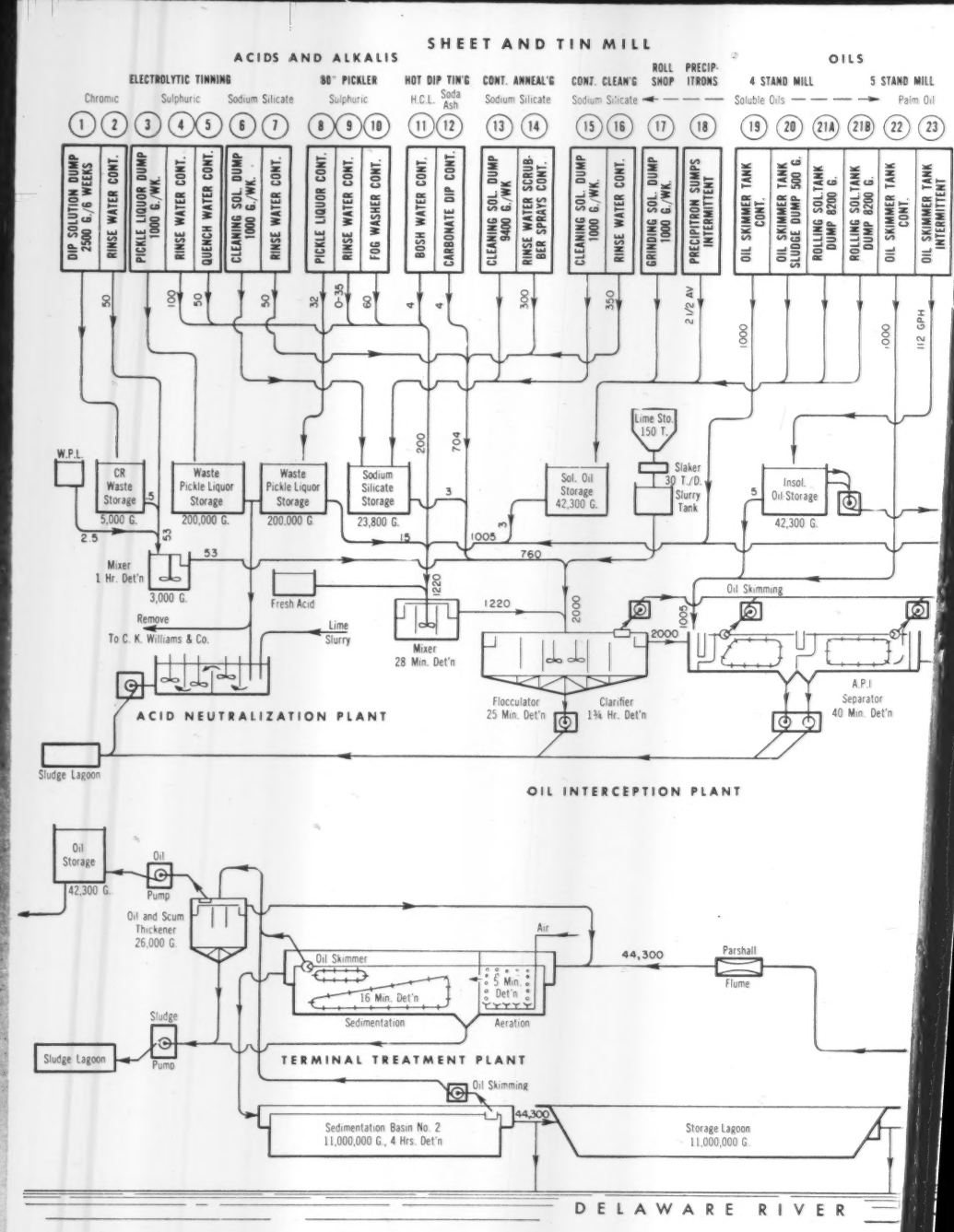
DeLeuw, Cather & Co., general consultants on the entire project, have a field force of 72 headed by T. C. Fredrick, project manager. E. G. Rusch is project engineer; H. H. Bohn, office engineer; and G. W. Lewis, utility engineer. There are three assistant project engineers: Quigley Fletcher, E. E. LeFan and W. V. Gafke. I. H. Luke is bridge engineer, in the Chicago office of DeLeuw, Cather & Co.

V. G. Thompson is coordinator for the Associated Turnpike Engineers, who are handling the engineering on 24 miles of the turnpike next to Oklahoma City, with a field force of 52. The Associated Turnpike Engineers is an association of the Oklahoma City firms of Hudgins-Thompson-Ball and Associates; George G. Toler Engineering Company, and Benham Engineering Company. W. T. Wishart is chief bridge engineer. Resident engineers are A. M. Dunlap, Lester King, R. P. Parmenter and H. Oliphant.

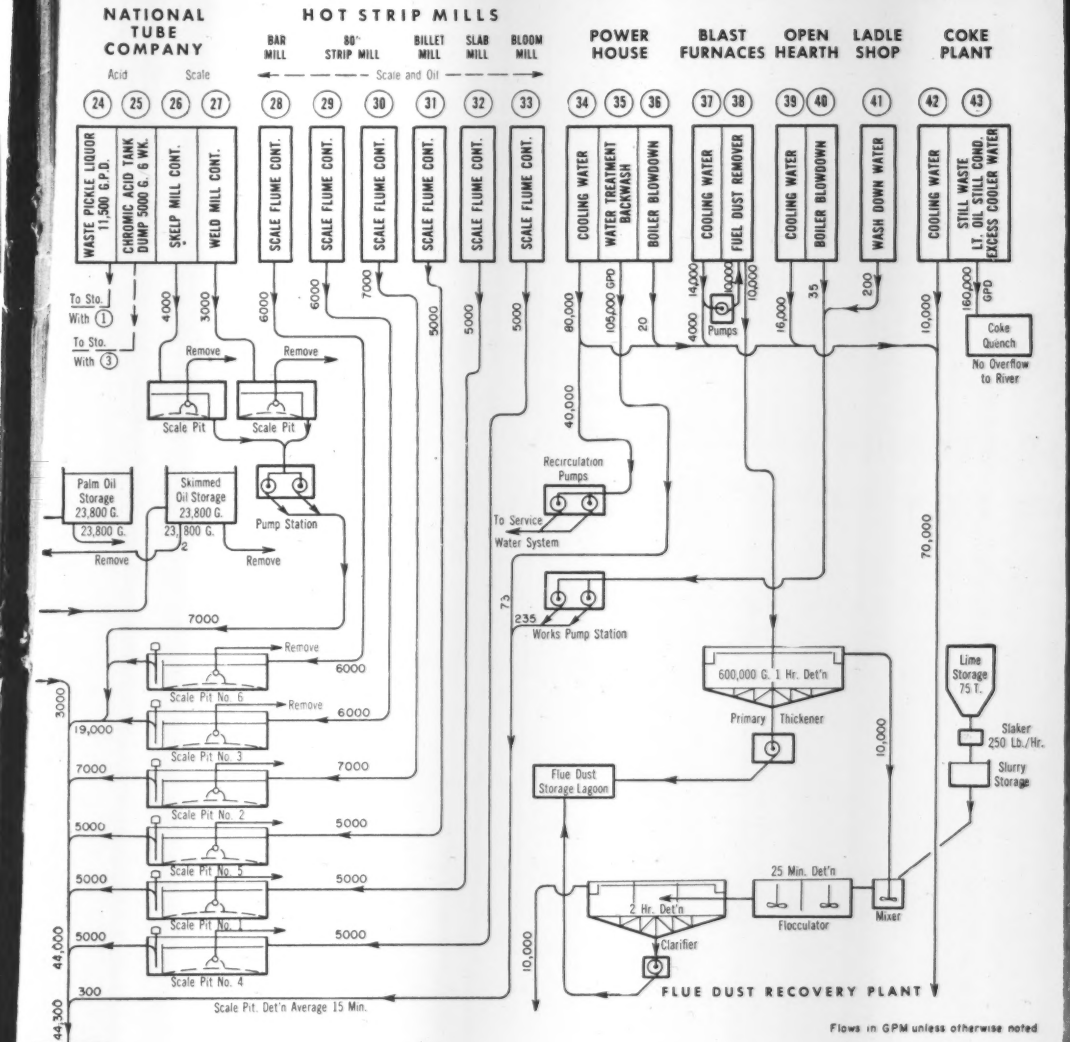
Allan Craig is coordinator for the Tulsa Turnpike Engineers, who have the engineering work on the 24 miles of turnpike extending west from Tulsa, using a total force of 30. The Tulsa Turnpike Engineers is an association of the Tulsa engineering firms of Fell & Wheeler; Wood & Craig; and Pate Engineering Company. W. H. Minor and M. C. Brady are resident engineers, and C. M. Lenderking is office engineer.

Lee Hendrix is consulting engineer in charge of one large bridge project and Wyatt B. Hendrick has the engineering on grading and paving of 5 miles of the turnpike. DeLeuw Cather & Company have charge of all bridges on this 5-mile section as well as grading, paving and bridges on the central 35 miles of the turnpike.

This picture is worth 10,000 words: it tells the



Fairless Works industrial wastes story



Flows in GPM unless otherwise noted

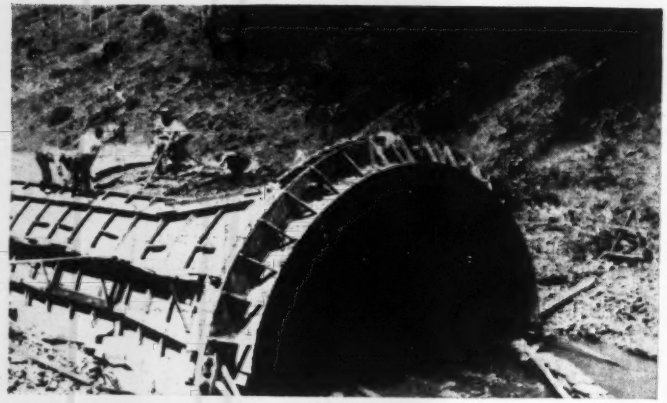
NEVER BEFORE has a single industrial wastes picture of such completeness been drawn up in advance for an industrial plant of such scale.

The above drawing depicts what wastes will issue from each separate source within U. S. Steel's vast Fairless Works in Morrisville, Pa. It indicates also, in advance, how each of these wastes will be handled.

From top to bottom it traces used industrial waters as they are stripped of their reclaimables and rid of their wastes. At the bottom, after treatment, these waters are ready for recirculation or return to the Delaware for reuse downstream. Plant effluent will have practically no acids, no oil, no chrome, some hardness, 15 to 25 ppm flue dust but less turbidity than the river itself.

U. S. Steel actually will increase low-stage flow of the Delaware River at this point (below Trenton, N. J.). It will discharge about 20 mgd drawn from ground waters of the area in addition to the 250 mgd to be taken from and returned to the stream (less evaporation and other minor losses).

Waste works design, as well as water supply design, was done for U. S. Steel by Hydrotechnic Corporation, New York. For description of the plant's water supply see ENR July 10, p 40.



ARCH CULVERT on the Pacific Highway in Oregon for which the barrel size was reduced by use of a flared inlet.

Cost savings anticipated from new culvert design

A METHOD for designing culverts that could produce considerable savings in culvert costs if widely adopted has been under study by Division 8 of the Bureau of Public Roads at Portland, Ore., for some years past. Now it has advanced to the stage where a research project has been set up at Oregon State College to make more exact determinations of the various factors involved in the method. Sponsors are the bureau and the Oregon State Highway Department.

Basic concept of the plan is a reduction in the size of the main barrel of the culvert through the use of a flared inlet to improve the hydraulic efficiency of the structure. It is a well-known fact that a culvert of uniform cross-section, with the inlet full or submerged, does not run full due to contraction of flow at the inlet. Flaring the inlet eliminates the contraction and so increases the quantity of water than can pass through the culvert.

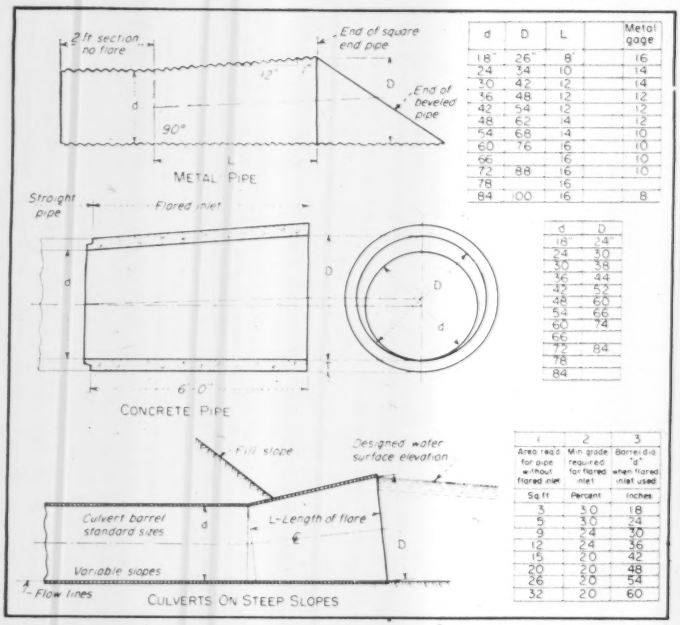
To illustrate the savings involved in a particular instance, assume that the runoff calculations indicate that an 8 x 7-ft box culvert is required. If a flared inlet conforming to the design indicated is used, a 6 x 6 barrel can be used without decreasing the capacity of the culvert or increasing the height of the headwater pool.

On the Pacific Highway in Oregon, use of flared inlets for some large arch culverts made it possible to substitute 10-ft arch barrels for culverts that would have required 12-ft barrels had no flared inlet been used.

These advantages are obtained only when the grade of the culvert is over 1%, hence flared inlets are not recommended except for culverts where the grade can be above that amount.

Inlets may be enlarged by flaring all four surfaces, or both sides and top, or both sides only. The most common method used is to flare both sides and top.

It is anticipated that a report of the findings will be made at the annual me
Bo



d	D	L	Metal gage
18"	26"	8'	16
24	34	10	14
30	42	12	14
36	48	12	12
42	54	12	12
48	62	14	12
54	68	14	10
60	76	16	10
66		16	10
72	88	16	10
78		16	
84	100	16	8

d	D
18"	24"
24	30
30	36
36	44
42	52
48	60
54	66
60	74
66	
72	84
78	
84	

1	2	3
Area req'd for pipe without flared inlet	Min. grade required for flared inlet	Barrel dia. "d" when flared inlet used
Sq. ft	Percent	Inches
3	3.0	18
5	3.0	24
9	2.4	30
12	2.4	36
15	2.0	42
20	2.0	48
26	2.0	54
32	2.0	60

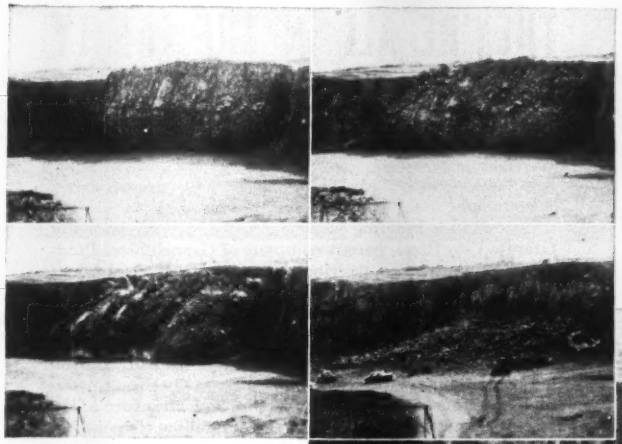
FLARED INLETS on culverts make possible the reductions in culvert sizes shown in tables accompanying the two top drawings. For culverts on steep slopes (lower drawing), if the culvert can be set on a slope steeper than the minimum shown in the table, the indicated pipe sizes can be used.

REEL NO.

BLASTING CLUES from the ATLAS MACHINE-GUN CAMERA

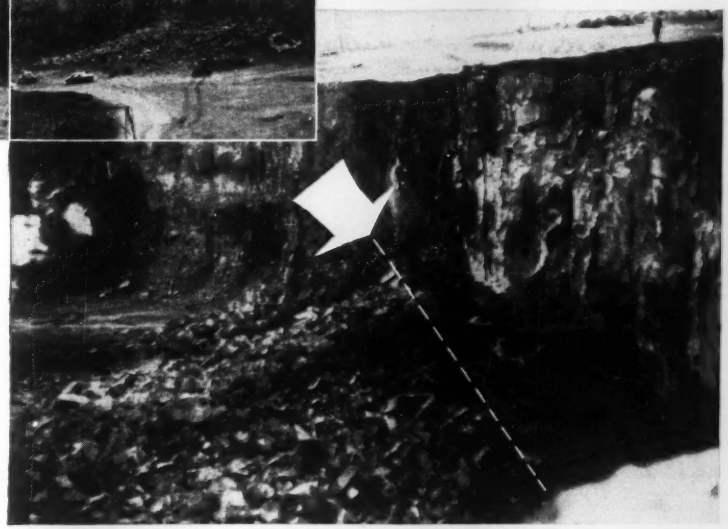
What Kind of Pile Faces Your Shovel?

Here's how alternate milli-second delay shooting can pile well-broken rock away from the face!



Photos at North Jersey Quarry Co., Millington, N.J.

Here you see a ROCKMASTER® alternate milli-second delay blast in action. The first picture was snapped by the machine-gun camera ⅕ second after the blast was initiated: bulging face already gives evidence of excellent breakage. The second photo shows the peak of the blast with the rock moving out from the face. In the third photo you can see the rock piling up on the quarry floor. Final photo shows the well-broken rock lying away from the face at about the height of the shovel boom—where it can be handled safely and efficiently . . . where it will cost the least to move.



Here's a close-up of a well-shot rock pile—the end result of a ROCKMASTER alternate milli-second delay blast. Note particularly the ridge of the pile indicated by the arrow and dotted line—see how the rock was piled *away* from the face. This is the kind of control over throw that only ROCKMASTER blasting can give.

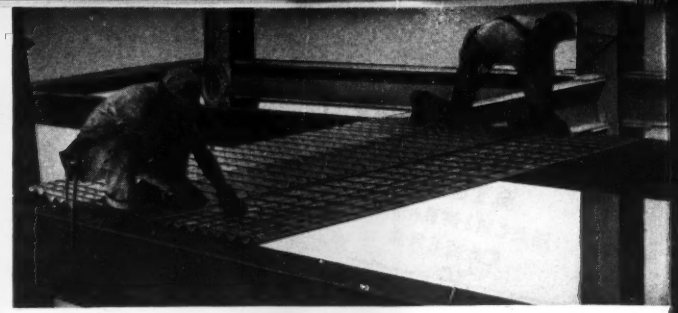
ROCKMASTER Blasting is *controlled* blasting. See how it can work for *you*. Send for free 16-page book *"Quarry Blasting the* ROCKMASTER *Way"*—it illustrates milli-second delay methods with machine-gun camera photos.

ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE

Offices in principal cities



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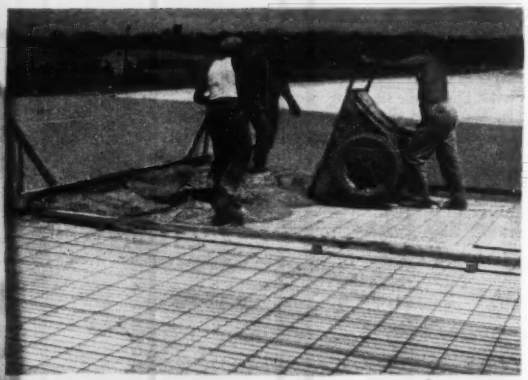
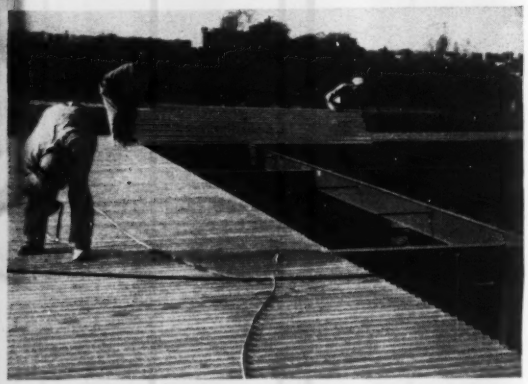
. . . the light-weight permanent steel form for concrete floors and roofs.





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Here are Four Granco Products for Your Needs—Pre-formed Steel to make your jobs stronger, better . . . faster

And "tough-temper" steel is the answer. Yes, high-strength, light-weight steel is one of the reasons that the Granco family of four building aids do a better job for you. For Granite City Steel, parent-company of Granco Steel Products Company, has developed a specialized steel to fit right in the building products picture.

Because it's manufactured from a low-carbon steel to begin with, Granco "tough-temper" does not require critical alloying to gain its high tensile strength. Instead, controlled cold-rolling, with strain hardening as the result, gives high and unusual physical properties. The structure of the steel itself actually changes . . . the crystalline elements realign . . . to produce a steel with a *minimum* yield point *above* 80,000 psi; and an ultimate of *over* 100,000 psi. This is *tough* steel!

Steels like this, fabricated into products like those illustrated on this page, mean more than marks on a blueprint. For construction people they mean simplified and more economical construction, savings in materials and labor. To your clients they mean better structures as an end-result.

We'll be glad to tell you more about any Granco product you are interested in, just write Department 11-5, you will get a speedy answer. For helping you is the most important part of our job. It's our way of saying "thanks" for specifying Granco.

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. . . the ideal long-span permanent steel base for light-weight insulating concrete.

GRANCO ROOF DECK

. . . the rotary-press formed flat-top roof-decking.

GRANCO STEEL PRODUCTS CO.

(Subsidiary of Granite City Steel Co.)
Granite City, Illinois

See our listing in Sweet's Catalog

SIR ERIC BOWATER, head of the worldwide concern building in Tennessee.

WORK STARTED on the grading and clearing of the site of the $55 million paper mill for Bowater Southern Paper Corporation in east Tennessee.

$55 million paper mill will transform region

Business is destined to boom in the sparsely-populated area of east Tennessee where Bowater Southern Paper Corp. has begun work on a $55 million paper mill.

The size of the development is pointed up by the annual payroll which will total an estimated $3 million.

But the roughly 1,000 employees who will be on the mill payroll when it is placed in operation in 1955 will not be required to live in a "mill village" because there will be no mill town.

Bowater officials spiked rumors that they planned to house their employees.

"Bowater is not going into the housing business," K. O. Elderkin, Greenville, S. C., general manager of the corporation, said.

Some of the workers will relocate in the vicinity of the mill instead of commuting and will buy or rent in the immediate area. Scores of new houses and businesses will spring up in the vicinity of the mill. New subdivisions will be created and new streets and highways will be built due to the impact of the project.

About 650 production workers will come from the Charlestown-Calhoun, Tenn., vicinity and 150 technical workers will be imported. Housing will have to be provided for them and reports are that private capital already is interested in the housing project.

Some company officials already have located in Cleveland and Athens, Tenn., near the mill site.

"All of this will be a big economic asset for the entire area," Harold V. Miller, executive director of the Tennessee Planning Commission, said.

Miller said the mill will create a market for the native grown pulpwood, and encourage an expansion of the reforestation program in the state.

The payroll of 1,000 workers in the mill will equal the entire population of the small adjoining communities, and this number does not include employees engaged in production of pulpwood.

People in the surrounding communities already are excited at seeing the heavy earth-moving equipment of Oman Construction Co., Nashville, moving 20,000 yds of earth daily.

Stirton Oman, executive of the construction company, said the bulldozers and other heavy equipment will be through with excavation and grading by the latter part of August.

J. E. Sirrine Co., construction engineering firm of Greenville, S. C., designed the plant and will supervise the construction. General contract for the big mill will be let sometime this month through negotiation rather than open bids. Construction, however, will not be started on the main building before the first of next year.

But work will start this month on the construction of five miles of railroad track leading to the plant site. Bailes-Seay Construction Co., of Jacksonville, Fla., has this contract.

Work will also be started in August by Raymond Concrete Pile Co., Atlanta, on a pile driving contract totaling $250,000.

The main building will be located about 1,000 ft from the Lee highway—U. S. Highway 411—and will be about 1,500 ft long. It will be of concrete, steel and brick construction, graduated from one to three stories in height. In the group of buildings will be a large office building to house the executive and administrative personnel.

Unless shortages of materials develop the mill will be completed by Jan. 1, 1955.

• **Planning**—Citizens of McMinn and Bradley counties have become concerned over the planning problems that will arise from the influx of people as a result of the project.

They petitioned and secured the establishment of a regional planning commission by the Tennessee Planning Commission.

Miller said the region embraces 10 sq mi in the two counties, including Charlestown and Calhoun and a part but not all of the 100-acre mill site.

The regional commission already is making progress in setting up a plan-

Deming "MOTOR-MOUNT" Condensation Return Units (above and at right). Single and Duplex units for 2,000 to 40,000 sq. ft. of radiation.

Deming Fig. 4958 Centrifugal Jet Units (below) for 500 to 10,000 sq. ft. of radiation.

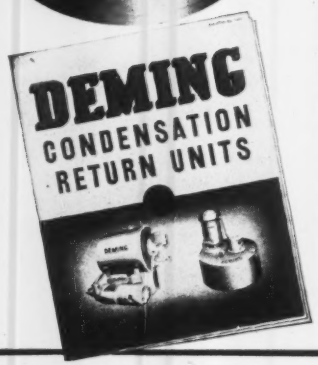
● These modern, efficient "fuel-savers" return the condensate from steam coils, radiators, or steam operated equipment back to the boiler.

Deming "Motor-Mount" centrifugal pumps are used on Deming "Motor-Mount" Condensation Return Units. Pump motors have standard "NEMA" type "C" mounting flange and are furnished for single phase, two or three phase or for direct current, as specified.

"Motor-Mount" pumps are equipped with enclosed type bronze impeller and stainless steel pump shaft. Deep stuffing box is provided with conventional packing rings for grease lubrication.

Deming Fig. 4958 "Hotshot" Condensation Return Units are equipped with a centrifugal jet pump. Entire pumping unit and jet can be removed for cleaning without disturbing any of the piping.

Ask your Deming Distributor or write us for illustrated Bulletin No. 4400 which includes performance tables to simplify selection of proper unit to meet specific requirements.



THE DEMING COMPANY
536 Broadway • Salem, Ohio

ning program which Miller said should include subdivision and zoning regulations, relocation of some roads and streets, and a plan for a new highway extending eastward from Calhoun to U. S. Highway 411 and the pulpwood mountain forests of the Tennessee mountains.

Bowater has been anxious to see the establishment of a planning program even though it is not establishing a mill town.

Miller feels that there is a large labor supply available in the area. For proof he points to the 10,000 people who signed up as available for work in a prospective new plant in the Etowah, Tenn., section of another part of the state.

"These people are not drawing unemployment security but they are eking out a living on small farms that could be operated by other members of the family if they get jobs," Miller said.

Meanwhile, people in the Chattanooga area were assured that pollution from Bowater will not materially affect fishing, recreation, or industrial processes in their area.

D. G. Moon, New York consulting engineer, head of the pulp and paper division of the J. E. Sirrine Co., gave this assurance to those who are worried about the expansion.

Adequate provision has been included in plans for the plant to keep pollution from its processes to a minimum, Moon said. These facilities will represent a "very substantial" expenditure on the part of Bowater.

Robert B. Cassell and Walter C. Long, principal industrial economists for the state commission, said great industrial expansion may be expected to follow the Bowater development through the location of allied industries in the area.

Officials of Bowater also have said they want some of the land zoned for industry, looking to the time when allied industry will want to locate next to them and use their paper saving long-haul freight charges.

By illustration, it was pointed out that the Mead Corporation's plant at Kingsport accomplishes more for the state by selling its paper to the Kingsport Press than by sending its product elsewhere in the nation.

Sir Eric Vansittart Bowater, chairman of the board of the parent Bowater organization, said it is the intention of Bowater's Southern Paper Corporation to speed ahead so that the "target date for completion of the mill early in 1954 will be achieved and operations begun."

(*Municipal continued on page 54*)

BROOKLYN was "unprintable"

Recently, The Consolidated Edison Company (in New York City) faced this problem: It had to produce a direct-process print from each one of more than ten thousand Brooklyn Underground Record Maps, showing the distribution system of electric service.

But satisfactory prints could not be produced directly from these maps. They were up to 30 years old . . . had been referred to constantly . . . and as a result were soiled, stained, creased, and "dog-eared."

What to do? Retracing was out of the question, since it would take a draftsman from two to three days to trace and check just one of these 17″ x 25″ drawings.

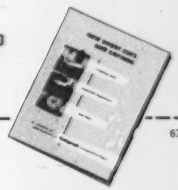
Kodagraph Autopositive Paper was the speedy, economical solution

With this revolutionary photographic intermediate paper, approximately 40 sharp and clean "duplicate originals" could be turned out in an hour. *Yes, 40 in an hour* because Kodagraph Autopositive Paper produces positive copies directly—without a negative step, without darkroom handling. At the same time, it drops out stains, creases . . . cleans up backgrounds . . . transforms weak detail into dense photographic black lines. Furthermore, Autopositive Paper can be exposed in standard print-making equipment . . . and processed in standard photographic solutions.

Thus, Consolidated Edison obtained—*in record time and at minimum cost*—a complete set of duplicate originals, which were used to produce the required direct-process prints . . . and were then filed away for future reference work and print-making needs.

Kodagraph Autopositive Paper

"THE BIG NEW PLUS" in engineering drawing reproduction



Learn in detail all the ways you can save with Kodagraph Autopositive Paper—the revolutionary photographic intermediate material which you, or your local blueprinter, can process *quickly . . . economically . . . at low cost.* Mail coupon today for free booklet!

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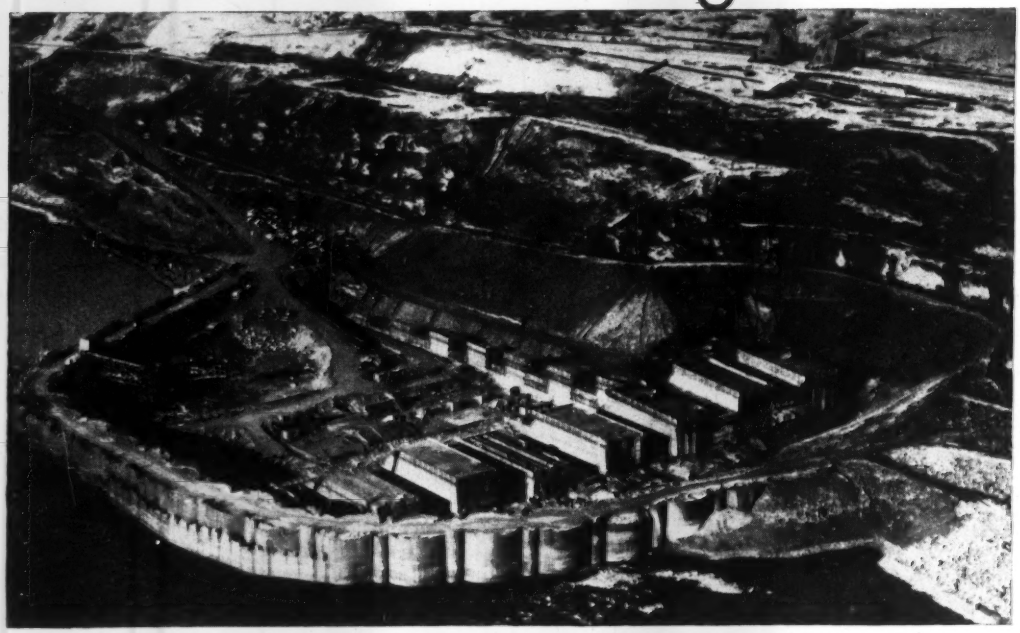
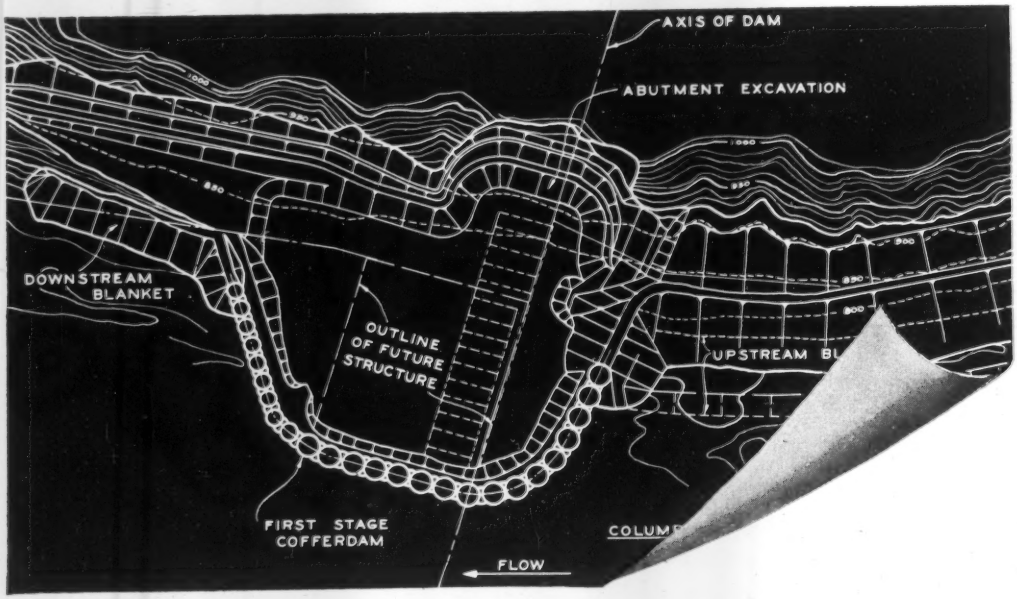
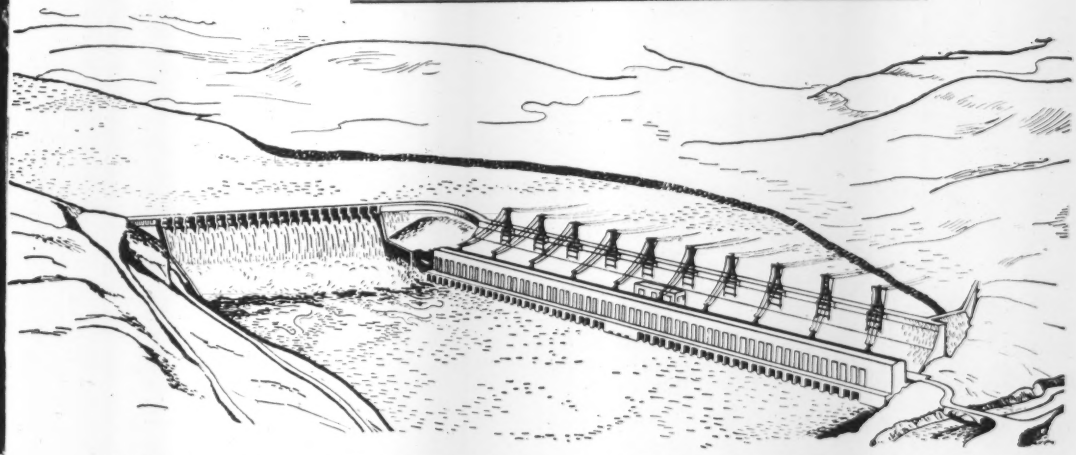


LOOKING NORTHWEST from the air, this view shows construction progress on training wall, stilling basin and spillway monoliths at Chief Joseph Dam near Bridgeport, Wash. Cells of U·S·S Steel Sheet Piling keep the construction area unwatered.



— and reused —

in constructing cofferdams for Chief Joseph Dam



ON the Columbia River, just 51 miles downstream from Grand Coulee Dam, the U.S. Corps of Engineers is directing construction of Chief Joseph Dam, scheduled to be second only to Grand Coulee in hydroelectric capacity. Since there was no practical way of diverting the Columbia from its channel during construction, the spillway is being built inside huge cofferdams of U·S·S Steel Sheet Piling.

In the first stage of construction, with Peter Kiewit Sons' Co., as contractors, a cofferdam was constructed from the north bank to about the middle of the stream. The cofferdam consists of nine cells 50.93 feet in diameter and 16 cells 63.66 feet in diameter with a maximum depth of 75 feet at the deepest point. 4,500 tons of MP-101 U·S·S Steel Sheet Piling and 200 tons of fabricated piling special tee pieces were used in this stage.

The second stage, now being carried out by Chief Joseph Builders, calls for concrete work within the cofferdam, removal of this cofferdam, construction of a second cofferdam on the south side of the river and concrete work within it. Much of the U·S·S Steel Sheet Piling from the first cofferdam was reused in the second stage along with an additional 1440 tons of MP-101 sections and 55 tons of tee pieces.

Construction of cofferdams was carried on in high stream velocities. By using cells of U·S·S Steel Sheet Piling with auxiliary "blister" construction on the river side, river velocities of 35 to 40 feet per second during flood periods were withstood.

The ability of U·S·S Steel Sheet Piling to withstand repeated driving and extraction makes it the ideal material for jobs like this. It has the toughness and resilience to withstand rough handling and battering during construction, as well as the stresses and impacts of service.

U·S·S Steel Sheet Piling is a finished product ready for use as shipped. When interlocked and driven, the resulting wall is continuous, earth-tight and virtually water-tight to any depth to which the piling can be driven.

For all types of cellular construction, as well as dock walls and wharves, bulkhead walls, cut-off and core walls and shore protection structures U·S·S Steel Sheet Piling deserves your consideration. Our engineers will be glad to discuss it with you.

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COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
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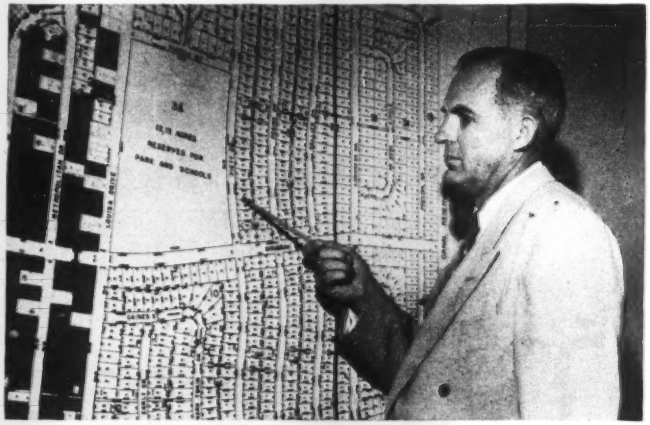
E-717 See our catalog in Sweet's



W. H. CRAWFORD, developer of Gentilly Woods, who is planning to build a shopping center large enough to act as a regional commercial district.

$5 million shopping center planned

The expanding eastern section of New Orleans is due to get a $5 million suburban shopping center which its developers say will be the largest of its kind in the city and one of the most extensive in the south.

A National Production Authority permit to build the center was recently issued to W. H. Crawford, the developer.

The center is intended to serve not only the 1231 families in Gentilly Woods, a subdivision developed by Crawford, but also the 20,000 families of the surrounding area.

Crawford said that receipt of the NPA permit puts the firm in a position to order detailed plans and specifications.

Over 50 installations are planned. Included will be shops, supermarkets, department stores, automobile sales and display and possibly a branch bank and theater.

Crawford said that consideration has also been given to erection of a multiple-story suburban office and professional building as part of the commercial center. Such a building is shown on the preliminary site plan.

Architects and land planners of Washington, New York and Chicago who specialize in shopping centers have been employed to study the proper land utilization and building requirements specifically adapted to New Orlean's climate.

• **Plans**—The working plans have been drawn up by Ketchum, Gina and Sharpe, New York firm of architects, with J. Wesley Leake, head of the Crawford Corporation architectural department as associate achitect.

The plans call for a mono-unit arcade type central structure covering 17 acres and containing more than 300,000 sq ft of air-conditioned sales space devoted to stores.

Nearby, a supermarket section would be connected to the main building by an air-conditioned underpass. Other individual units would contain a restaurant, automobile sales rooms and a "courtel" or suburban hotel.

Slightly more than 300,000 sq ft will be allotted to ground level sheltered parking, with rooftop space on the central structure available for overflow parking. The rooftop parking area would be reached from the ground level by escalators.

• **Checking system**—A checking system will make it possible for each customer's assorted purchases to be delivered to a central call station, where the shopper may drive up and have all the packages deposited in the automobile.

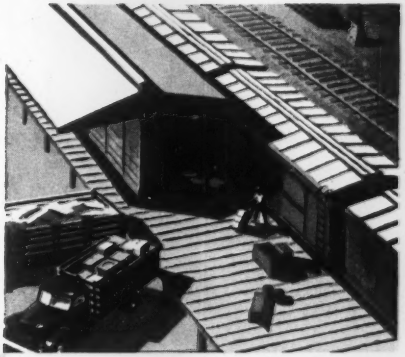
The concept of the center is based on an economic survey by Homer Hoyt and Associates of New York and Chicago. This showed that a regional commercial district is indicated for the location rather than the usual neighborhood shopping center.

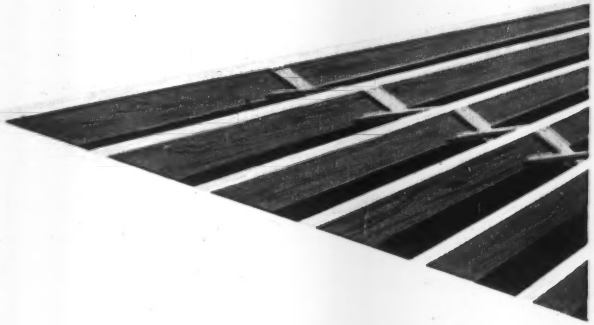
The study took into account population trends, the city's master plan of development, effective buying income in Gentilly and other factors.

(*Continued on page 57*)

WOOD

most workable of structural materials...





...lasts years longer when penta* PROTECTED

You use wood for building construction because it is the most workable of materials, offers the greatest flexibility of design and is always available. And when you specify PENTA protection for the wood you use, you also add the valuable qualities of *durability* and *long structural life.*

The treatment of wood with PENTA assures service life many times increased through the prevention of rot and termite damage. This PENTA protection is *permanent,* too, since PENTA will not leach or evaporate. Workability is unimpaired, and building mechanics prefer to work with PENTA-treated wood because it is *clean.*

For more data write Dept. PE 39 for one of the following:

- *Plant Wood Treating Specifications*
- *Valuable Booklet, "Pointers on Penta"*

***"Wood treating specifications:** Structural Lumber, all species, and other wood construction materials to be used in contact with the ground and exposures of similar severity, and not to be painted, shall be treated by a method which will give a minimum net retention of 8 lbs./cu. ft. of '5% penta petroleum oil solution.' For bridge material a minimum net retention of 12 lb./cu. ft. shall be used. Where an especially clean treated wood is desired, the oil shall meet A.W.P.A. specification page 50 Section 2."*

(This is an excerpt from the wood treating specifications of a plant operating in the Gulf Coast Area.)

THE DOW CHEMICAL COMPANY
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for INDUSTRIAL and COMMERCIAL BUILDINGS

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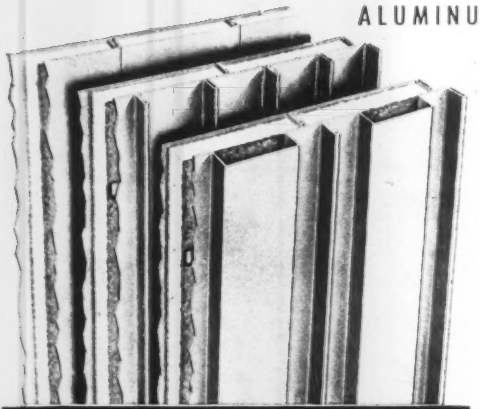
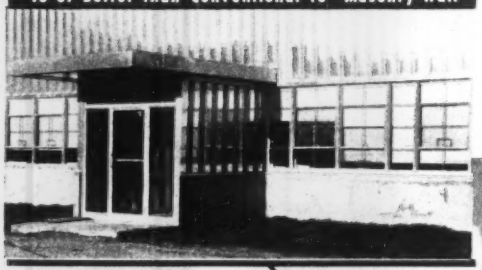


FLUSH, RIBBED, or FLUTED
Over-all "U" Factor of Various Types is Equivalent to or Better than Conventional 16" Masonry Wall

In new plant planning, this modern wall construction continues to gain favor with both architects and owners throughout the country. As evidence of this, we point to a second complete new plant built for Quaker Oats in Chattanooga, Tenn. The first Quaker Oats plant built with this wall construction was completed last year in Omaha, Neb. In the two plants, Mahon Insulated Metal Walls with aluminum exteriors were employed to good advantage in the construction of eleven separate buildings. Mahon Insulated Metal Walls can be furnished in Aluminum, Stainless or Galvanized Steel in the three distinct exterior patterns illustrated at the left . . . they are available in two "Field Constructed" types, and in two types of "Prefabricated Panels". Walls of the "Field Constructed" type can be erected up to fifty feet in height without horizontal joints—a feature of Mahon walls which is particularly desirable in power houses or other buildings where high expanses of unbroken wall surface are common. Mahon Insulated Metal Walls go up quickly, resulting in considerable saving in time and construction costs. For complete information on this modern, permanent wall construction, and Mahon Steel Deck Roofs, see Sweet's Files, or write for Catalogs No. B-52-A and B.



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The Hoyt report, said Crawford, was the basis for setting aside 42 acres along Gentilly Blvd for commercial development as part of the Gentilly Woods plan.

And the architects, he said, have emphasized the natural beauty of the land with additional plantings to attain a park-like surrounding effect.

City buys 189 acres as industrial site

Two weeks ago the City of Nashville agreed to purchase the sprawling 189-acre classification center on Thompson Lane as an industrial site. The plan was to buy it for about $113,400 and then turn it over to the Nashville Chamber of Commerce for development.

The Chamber of Commerce board of governors has agreed to the plan, and negotiations for the purchase at $600 an acre are now under way.

The area, some three miles removed from the present city limits, is ideally situated for industrial development. Several large local manufacturing concerns already are established there.

Another advantage of the site is the existence of water mains and other utilities. The utilities were installed by the Army when the area was used during World War II as a center for the classification of air inductees. Later, when such classification centers were not needed, it was taken over by the Navy for separation from the service of Naval personnel.

• **Business deal**—Under a presidential directive issued several months ago, the City of Nashville is able to buy the property for the original cost of acquisition of $113,400. It has agreed to do this and to turn it over to the Chamber of Commerce for this price.

The chamber in turn will redispose of the property to private industry in smaller parcels.

At one time, the center also housed 800 veteran families, but that figure now has been cut to 275. These families will receive notice shortly that they must move to other quarters.

In applying for the area, the chamber pointed out that it is the only site in the Nashville area with city utilities and services necessary to attract industry close to Nashville.

In addition it was reported that the electric power lines, gas lines and railroad facilities would also be very attractive. The center lies adjacent to a $14-million railroad receiving yard now under construction by two railroads.

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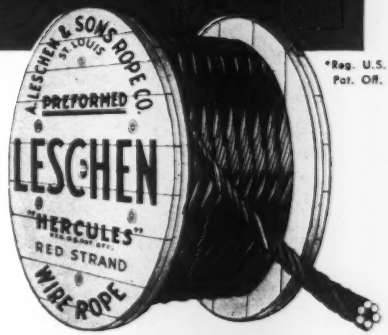

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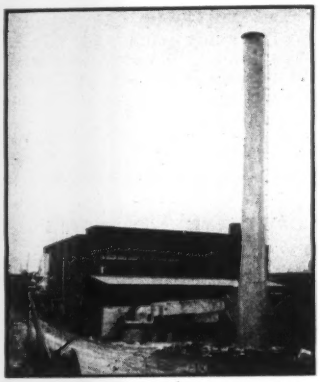

LEASE-OPTION incinerator plant being built in Santa Monica, Calif. (ENR photo)

Unusual finance deal to build destructor

The city of Santa Monica, Calif., is currently running acceptance tests (scheduled for last two weeks in July) on a new $425,000 incinerator which has been built under a lease-option-arrangement between the city and Northwestern National Life Insurance Co.

Background for the incinerator and the unusual financing arrangement is:

Until 1948 the city had disposed of its refuse by open burning. Because the Los Angeles County Air Pollution Control District felt open burning contributed to the area's smog problem, Santa Monica shifted to sanitary fill, or "cut and cover." This was continued until it became evident that city land available for the purpose would last only two or three years longer. Trash could be hauled to land outside the city, but over a period of years the haulage cost would run into a considerable expense. The city decided an incinerator was a necessity.

Getting a bond issue on the ballot would take months, and time was pressing. So the Santa Monicans, under City Manager Randall M. Dorton, looked around for another method of financing—lease-option.

It was a three-way arrangement between the contractor, Chas. W. Pettifer of Long Beach, Calif., the city and Northwestern National Life Insurance. The city sold the land for the project—an abandoned clay pit—to Pettifer. Pettifer built the incinerator, with the agreement that Northwestern would buy it as soon as it was tested and accepted by the city.

Under the contract between the city

(*Continued on page 60*)

Here's the hookup for valve-killing corrosive services...

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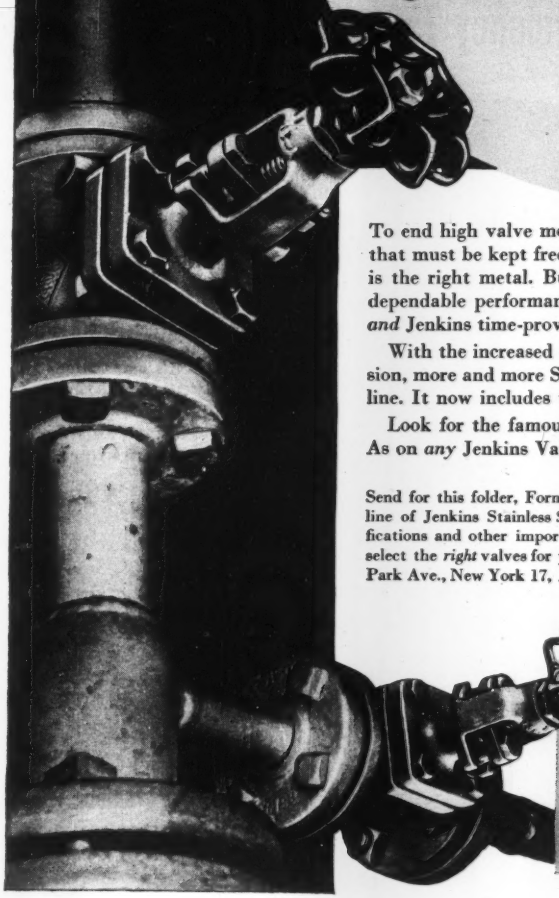

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and Northwestern National the city will rent the incinerator at a monthly rate of $2,865. At five-year intervals over a lease period of 20 years, the city will have the option to buy, at set prices: $377,500 after the first five years, $283,000 after the second, $165,500 after the third, and $25,000 at the end of the 20 years.

The agreement is not a lease-purchase one, which would obligate the city to buy and would be illegal. It is strictly "lease-option"; the city has sole option and is not obligated to buy at any time. Legality of this arrangement has already been tested in the courts by the State of California.

Actually Santa Monica intends to buy at the first option time from funds set aside yearly in city budget.

If the city waited until the end of the 20-year period to buy, the lease-option method of financing would be more expensive than a bond issue. But by buying at the end of five years, the city will save money, since interest on the bonds would run over at least a 15-year period.

The incinerator—designed by Pettifer—has four F. O. de Carie furnaces in a three-level, 40x100-ft building of steel frame and corrugated iron on a concrete foundation.

Capacity of the furnaces is 75 tons per day (24 hours) each. A new feature of the furnaces is the use of two grates, one above the other. Refuse is dumped onto suspension grate, which is 4½ ft above the burning grate; after it is dehydrated and partly consumed it is dropped onto the burning grate. Result is a marked increase in efficiency of consumption.

Re-examination ordered in pollution crack-down

Two deputy attorneys general have been given the job of processing the cases of 37 Pennsylvania municipalities which failed to meet a June 30 deadline on eliminating stream pollution (ENR July 3, p. 58).

All the cities are located on the Susquehanna River and have been under orders for a year to carry out anti-pollution plans. Attorney General Robert E. Woodside appointed Robert L. Rubendall and Robert J. Trace to work on the cases.

Woodside said that his order for re-examination of each case did not constitute a change of policy in the state's clean streams program.

But Woodside reiterated his previous contention that there will be no wholesale prosecutions of communities and their officials. He said each case will be considered on its merits.

Another testimonial to LEVINSON *fabrication*

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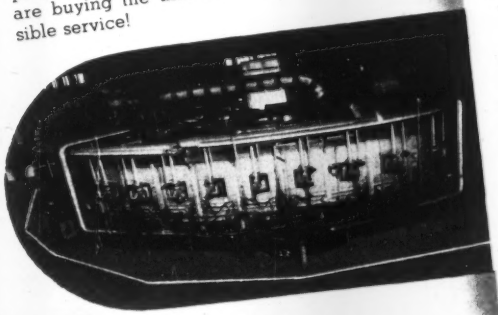

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New York slashes low-rent program

New York City, a leading builder of federally aided low-rent projects, has been forced to slash its program to 4,880 apartments.

The curtailment is a result of the Congressional economy cut-back. Originally the city had planned on 10,581 units in the June 30, 1952 to June 30, 1953 period. The cut is from $85 million to $39 million.

In a progress report to Mayor Impelliteri, last week, Philip J. Cruise, chairman of the City Housing Authority, named five projects with 2,042 units and an estimated cost of $19.5 million, to be definitely started in the next few months.

Cruise also outlined four other projects of 2,402 units, estimated to cost about $19.5 million, as possible projects. Their construction would depend upon the number of units allotted to the city by the Public Housing Administration under the appropriation voted by Congress July 2.

• **Federal aid**—Aid from the federal government consists of a guarantee of bonds sold by the City Housing Authority to finance its projects, plus an annual subsidy to cover the difference between costs and the low rent charged to low-income families.

At the same time he announced the cut in the program, Cruise gave tentative locations of eleven projects under a federal-aid program for 16,000 apartments, which the PHA authorized the city to start planning last month.

Now these projects will have to wait for construction during the future, along with the other projects which have been deferred by Congress' action. The National Housing Act of 1949 looked forward to 135,000 units a year compared to the 35,000 authorized this fiscal year.

• **Future plans**—A preliminary estimate of the cost of obtaining the sites and building the eleven tentative projects was set at $190 million.

PHA would provide an annual subsidy and also would lend the city 90% of the construction and site costs if the money could not be borrowed privately.

• **Present use**—Cruise said that 15 new projects are under construction at the present time. These projects will provide 14,725 units.

The housing authority is now operating 51 projects, in which over 225,000 persons are living.

• **Schedule**—Here are the projects as outlined by Cruise:

• Soon to be bid: Jefferson Houses, first section, 469 apartments; St. Nicholas Houses, third section, 647 apartments; Brevoort Houses, first section, 412 apartments; Red Hook Houses, second section 350 apartments; South Jamaica Houses, second section, 600 apartments. Possible for this year: LaGuardia Houses, first section, 490 apartments; Brevoort Houses, second section, 484 apartments; Van Dyke Houses, second section, 719 apartments; Hammel Houses, 709 apartments.

Municipal briefs

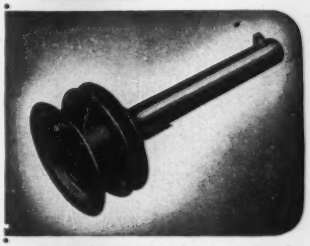
• **N. Y. C. haunted by rainmaking**—Suits against New York City for alleged damages to upstate farms and resorts by 1950 cloud-seeding efforts have returned to the courts. Claims were dismissed a year ago on a legal technicality, because the complaints as submitted did not actually name the city as defendant. A 3-2 appellate division decision, last month, said the city was unmistakably the defendant although not formally named. Only individuals in the city's employ had been named. Litigants now have the right to sue again for claimed damages totaling about $1.25 million.

• **Atlanta expressway approval**—Atlanta is assured of the completion of its multi-million-dollar expressway now that the voters have approved a $6-million city bond issue and a Fulton County $6.7-million issue. Unofficial returns early this month showed the vote in the city 11,983 for and 1,663 against, while in the county the vote was 12,727 for and 2,364 against. There was no organized opposition to the bond issue.

• **$7-Million pipe**—The Los Angeles Department of Water and Power is building a $7-million pipe to deliver 171 mgd of Colorado River water to its Rowena, Silver Lake and Hollywood Reservoirs. The 10-mi, 68-in conduit will be the department's major source of Colorado water, tapping the Metropolitan Water District's aqueduct at its San Rafael tunnel in Eagle Rock. Also under construction by the department is the new Eagle Rock Reservoir, being built near the San Rafael tunnel at a cost of $1.4 million. Capacity will be 85 mg.

(*Municipal continued on page 65*)

2 ways to make crane operations pay more



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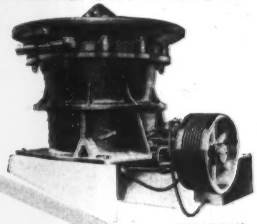
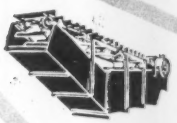


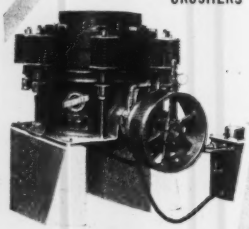
GYRATORY CRUSHERS



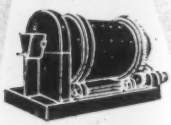
SAND DRAGS

SAND CLASSIFIERS

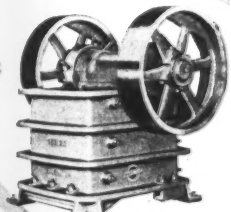
INTERCONE CRUSHERS



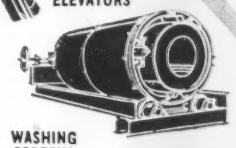
SUPER SCRUBBERS



JAW CRUSHERS

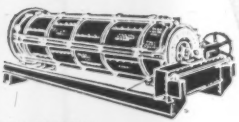


CONVEYORS AND BUCKET ELEVATORS



WASHING SCREENS

APRON AND PLATE FEEDERS



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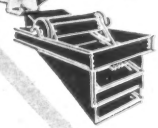

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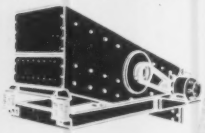

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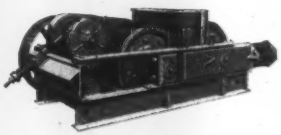

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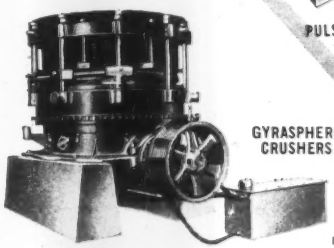

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Ohio court clears way for parking facilities

Ohio's Supreme Court ruled last month that the city of Columbus may use on-street parking meter revenues to pay off bonds issued to finance off-street parking facilities.

The opinion was handed down after Mayor James A. Rhodes and City Auditor R. P. Barthalow refused to sign $4 million in revenue bonds.

Mayor Rhodes and Barthalow had contended in the test case that the bonds would not be adequately secured since the pledge of on-street parking meter revenues for bond payments could be withdrawn at any time in the future.

They further contended that the real purpose of taking cars off the street was contradicted by the pledging of revenues derived from parking meters.

The high state court held that if there is "any inadequacy of security for the bonds, this court will not prevent the buyer from taking that risk if he wants to assume it."

The opinion further held that since all revenues collected, are devoted to the payment of the bonds, the use of on-street parking revenues to retire the bonds would not constitute a tax. And that the bonds would not be a debt of the city.

• **Plans to proceed**—William R. Morris, Columbus' off-street parking commissioner, said the actual site hasn't been determined yet. Two plans now being considered.

In the first of the two plans the city would buy the site, construct the building and operate the facilities. The project would cost an estimated $1.2 million and bonds would be retired from profits plus money from parking meter funds.

Under the second plan, the city would buy the site and a building, financing and operating firm would construct the facilities and operate them after giving title to the city. The firm would retain profits from the operation and pay the city rental on the facilities. The only cost to the city would be purchase of the site which Morris estimated at between $400,000 and $500,000.

Morrison-Knudsen of Boise, Idaho, are the builders; Ford J. Twaits Co., of Los Angeles, are the designers; and System Auto Parkers, of Cleveland, are the operators in the combined firm being considered under the second plan.

(Municipal continued on page 67)

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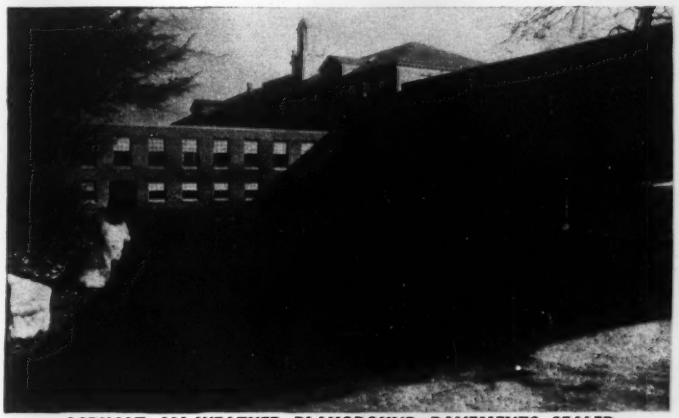

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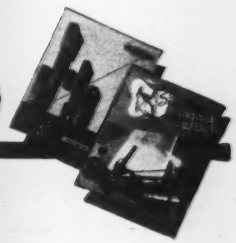

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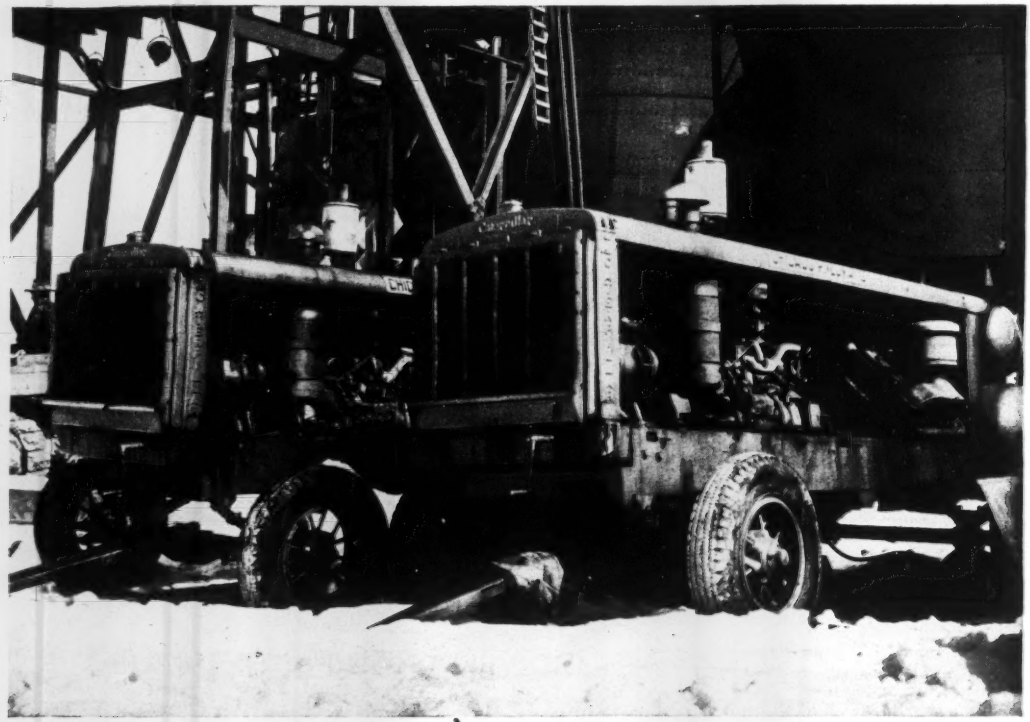

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CP Fiftieth ANNIVERSARY

St. Paul speeds slum clearance project for 200 acres near state capitol

With seven years of preparatory work, planning, and financing behind them, the City of St. Paul and the State of Minnesota are now pushing ahead fast on a $7 million Capitol Approach Clearance Plan.

Aimed at clearing an unsightly 75-acre slum area surrounding the capitol and transforming the area into a stately park approach, the plan (ENR Jan. 22, 1948) calls for the expenditure of $2 million of city and $2 million of state funds for property acquisition, construction of a new roadway system and a number of new state office structures, and landscaping of the surrounding area.

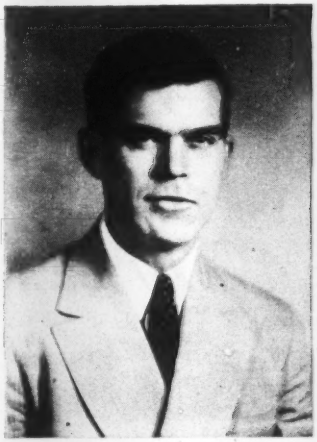
A local newspaper in the early '30's described the eight-block collection of rooming houses, junkyards, used car lots around the capitol as a "screen of ugliness."

There is no thought of returning any of the property acquired to private use, but to use it for suitable street and parkway improvements and to erect a $2-million state office building for veterans organizations.

It was recognized that the amount of money required to clear and rebuild all of the blighted area by far exceeds any conceivable public program. If any substantial portion of the present slums are replaced with tax-free property, the resulting load on privately operated real estate will be insupportable. Recognizing the gain to the adjoining proper from the capitol approach, the redevelopment of the area bordering upon it to the east and west, comprising 125 acres of similarly deteriorated property, into high-grade residential and commercial properties has gone ahead. In this manner, they will not only reclaim that property directly, but will recapture in taxes the costs which have been expended in the capitol approach itself.

Conservative estimates of the increased tax revenues which will result from the redevelopment of these areas indicate that the entire public cost of such a program will be repaid within ten years from increased real estate taxes alone.

• **Costs**—The total cost of land acquisition and site improvement for the 125 acres, including interest and contingencies, will be approximately $6.9 million. The estimated actual new-use value will be approximately $2.4 million, leaving a net public cost of $4.5 million. The local share of this cost will amount to about $1.5 million.



WILLIAM B. RANDALL, chairman of the St. Paul Housing and Redevelopment Authority.

The federal legislation covering redevelopment projects such as this, provides, however, that any local funds spend on slum clearance and redevelopment work which contributes directly to the redevelopment project may be included as a local non-cash grant-in-aid.

The local funds being spent on the present capitol approach project are substantially in excess of the local share in this redevelopment project. The St. Paul Authority has received tentative approval by the housing and Home Finance Agency of the allocation of capitol approach expenditures as non-cash grant-in-aid in such amount that the actual local cash requirement will be only slightly in excess of $200,000. For the expenditure of only $200,000 of locally raised funds, the City of St. Paul will, through the redevelopment project, secure a $7-million public improvement. It was because of this financial benefit that the slum areas adjoining the capitol approach were chosen for St. Paul's first redevelopment project.

• **Taxation**—The Minnesota State Legislature in the basic legislation establishing the housing and redevelopment program gave local authorities the power of taxation limited to ¼ mill in each year. The result is that the cash share of the St. Paul redevelopment program is being raised through this special cash levy without straining the

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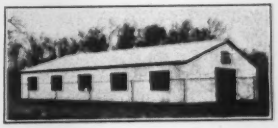

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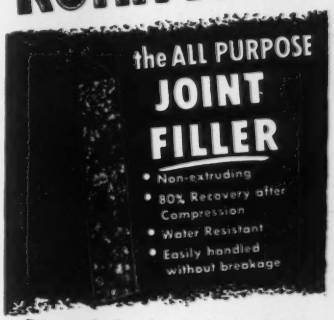

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city budget.

The program has been worked out by the staff in continuing conferences with the staff technicians of other city departments such as the city planning board. The authority has incorporated plans worked out by state and federal departments concerning highways.

• **Public approval**—The initial effort to obtain public acceptance was a thorough explanation of the plan to the heads of downtown retail stores. They then called all of the retail merchants to a luncheon and formally adopted a resolution commending the project.

The project is not actually under contract, the authority anticipates start of the program very shortly.

Chicago faces lawsuit to halt filter plant

A lawsuit, whose objective is to halt construction of Chicago's $85 million central district filtration plant in Lake Michigan (ENR Feb. 8, 1951, p. 29), has been filed by 53 property owners in the Circuit Court of Cook County.

However, work has started and dredging of the 65-acre site for the cofferdams was started June 16 by the Great Lakes Dredge and Dock Co.

The complaint has a distinguished list of defendants. Besides the city, defendants include the Chicago Park District and the Great Lakes Co.

Among the complainants are: Northwestern University, North Central and North Michigan Avenue associations and many property owners.

• **The complaint**—The complaint challenges the validity of the city and park ordinances permitting the construction of the filtration plant.

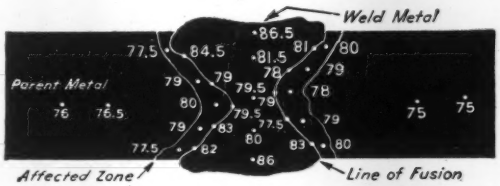
The complaint also maintains that the Department of Defense permit allowing the city to proceed is not legal and is not binding on the city.

Property owners connected with the lawsuit charge that the project will mar the beauty of the lake front, that it will interfere with navigation and will lower property values.

• **No cease work**—Construction work on the filter plant will continue until it is stopped by a court order, Mayor Martin Kennelly announced. If the city should lose the suit, the case would be appealed to the higher courts.

Corporation Counsel John J. Mortimer has declared that he will file suit against the plantiffs for the amount of any loss that the city may suffer in the sale of the water certificates because of the suit.

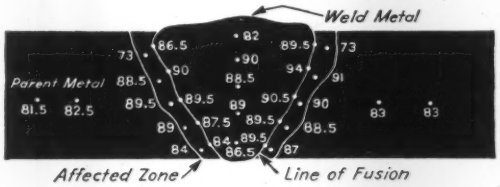
This Low-Alloy High-Strength Steel Welds as Readily as Carbon Grades



Rockwell B hardness on ½-in. manual arc-welded plate of Mayari R, stress-relieved at 1050 deg F.

Mayari R is a low-alloy, high-strength steel that can be welded by the ordinary methods used for plain carbon steel . . . electric-resistance, including spot-, seam-, and flash-butt . . . electric-arc, including metallic, carbon, and inert-arc . . . automatic-submerged-arc . . . and gas-welding processes.

There is no difference in the equipment, the technique, or the welding speed with Mayari R.



Rockwell B hardness on ¼-in. manual arc-welded Mayari R plate, as welded.

A non-air-hardening grade, Mayari R shows no appreciable hardening from welding temperatures. Results of tests made on welded Mayari R indicate that the welds are equally as strong as the parent metal.

Full information on welding and fabricating this steel is readily available for your files. Write or phone any Bethlehem sales office and ask for a copy of Mayari R Catalog 259.

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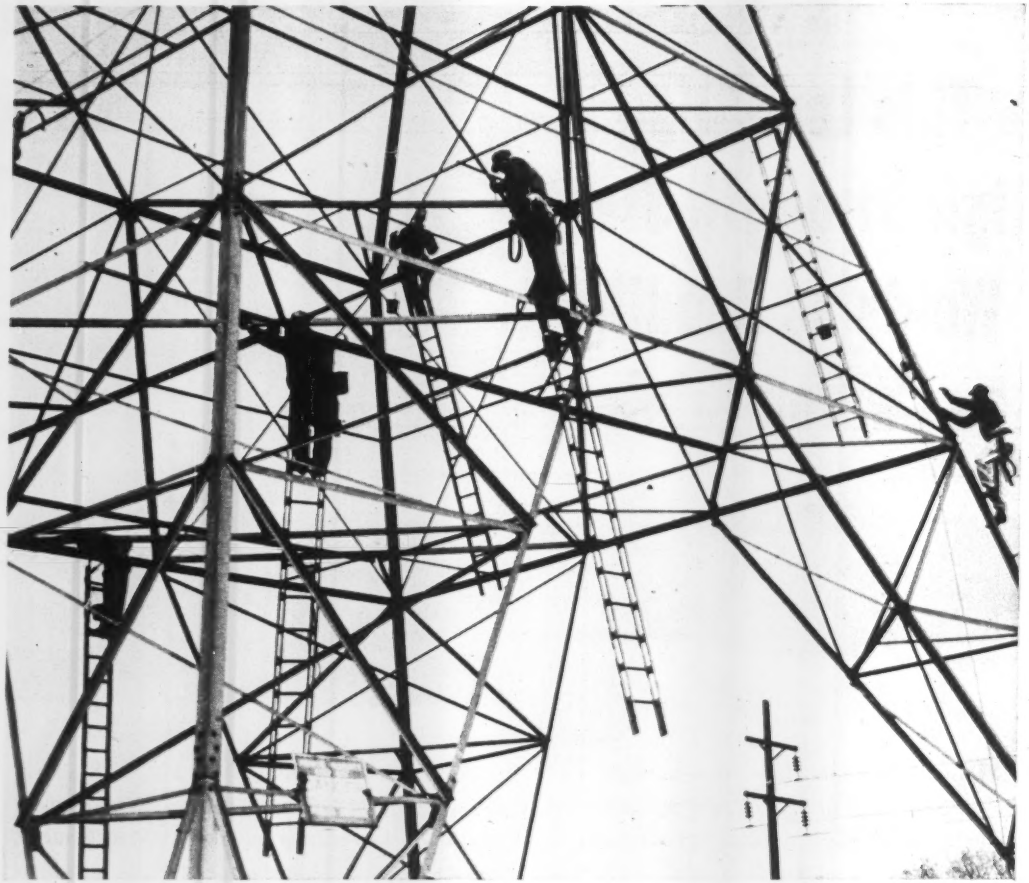

Tailored coat for all kinds of weather

To keep the wires up and the juice pouring, this transmission tower has to be tough. Yet its interlaced steel body is always exposed to destructive weather attacks. That's why these painters are giving the steel specially "tailored" coats of Du Pont DULUX Metal Protective Paints.

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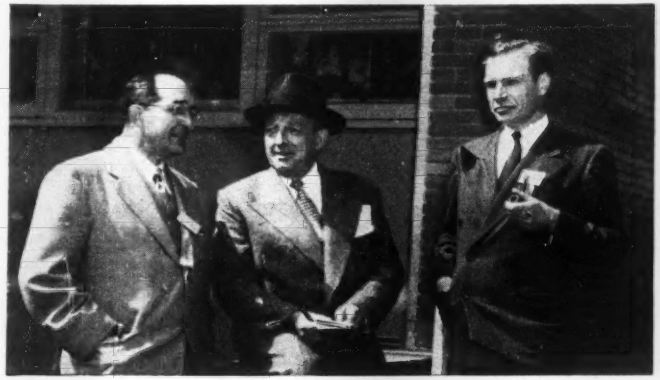

LEADERS IN RESEARCH—Among those instrumental in locating and establishing the Richmond Field Station are, left to right, M. P. O'Brien, Dean of the College of Engineering; George C. Tenney, chairman of the Engineering Advisory Council; and Harmer E. Davis, director of the Institute of Transportation and Traffic Engineering. Photo was taken in front of the Institute's new headquarters building.

New engineering field station set up for University of California

Engineering research at the University of California will have more elbow room because of a 160-acre field station now being established in Richmond, Calif., eight miles away from the crowded Berkeley campus. A variety of activities will be conducted at the new site. Those of importance to the construction industry are the Institute of Transportation and Traffic Engineering and the Sanitary Engineering Research Project—both now at Richmond. Still to move their bulky equipment from the Berkeley campus to Richmond are researchers studying ocean-wave phenomena as well as those in certain mechanical, electrical, and metallurgical fields.

The recent move was marked by an open house attended by 400 engineers and public officials. It corresponded with opening of a new headquarters building for the ITTE at Richmond, Calif.

Occupancy of the field station culminates several years effort on the part of university administrators, College of Engineering staffers and the Engineering Advisory Council. This latter group is made up of California alumni prominent in engineering. Chairman is George C. Tenney, vice-president of the McGraw-Hill Publishing Co., Inc. Council membership from the construction industry includes Paul Bailey, consulting engineer and former California state engineer; S. D. Bechtel, president of Bechtel Corp.; Harold E. Hedger, chief engineer of Los Angeles County Flood Control District; Walter L. Huber, consulting engineer and ASCE presidential nominee; T. E. Stanton, retired California Highway division materials and research engineer; Frank M. Stead, California Department of Public Health; and I. C. Steele, retired Pacific Gas and Electric Co. chief engineer. The advisory council helped locate the new field station site and sell the Board of Regents on the idea of establishing the operation at the new improved field station.

Beside the College of Engineering's Dean M. P. O'Brien, staff members important in the development of the new field station are Harold B. Gotaas and Harmer E. Davis. The latter directs the ITTE and Gotaas is director of the Sanitary Engineering Research Project. Gotaas also is chairman of the civil engineering division of the university. The SERP occupies existing old buildings at the 160-acre ex-industrial tract. But the exterior belies the sleek interior of the laboratories. At present major researches of SERP include composting of garbage, water reclamation, salt-water intrusion, sewage reduction by algae symbiosis, and disposal of radio-active wastes.

(Research continued on page 72)

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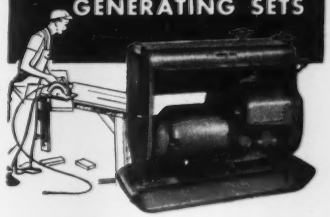

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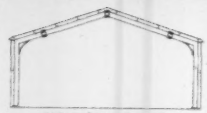

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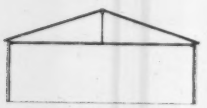
TRUSS TYPE



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RESEARCH

Column formula approved by research council

The Column Research Council voted approval at its last meeting of a memorandum in which it stated that the tangent-modulus formula for the buckling strength of columns may safely be used as a basis for establishing working-load formulas. Information of similar basic importance will be included in memorandums to be issued by the research group in the future.

Part of The Engineering Foundation, the Column Research Council was formally organized in 1944 to develop data on the behavior of compression members and to improve design procedures. Its work is supported financially by several organizations, including The Engineering Foundation, the Association of American Railroads, American Institute of Steel Construction, Aluminum Company of America, Office of Naval Research, Research Corporation and various state highway departments.

• **Ultimate load predicted**—After years of research, the council has concluded that the best method for predicting the ultimate load that can be supported in compression by straight, prismatic, axially loaded, compact members of structural metals, is use of the tangent-modulus column formula. This formula is obtained by substituting the actual slope of the metal's stress-strain curve for the modulus of elasticity called for in the well known Euler formula. The recommended equation is:

$$\frac{P}{A} = \frac{\pi^2 E_t}{(KL)^2/r^2}$$

where P is the ultimate load in pounds, A the cross-sectional area in square inches, E_t the compressive tangent modulus (slope of the coimpressive stress-strain curve of the material in the column at the stress P/A) in pounds per square inch, r the least radius of gyration of the cross section in inches, L the length of the column in inches and K a constant depending on end conditions.

This constant is equal to unity when both ends of the column are simply supported and to one-half when both ends are fixed. For one end fixed and the other end simply supported, it is equal to 0.7. And for one end fixed and the other free, it is equal to two.

• **Limitations**—For materials that have upper and lower yield points in com-

(Continued on page 75)

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This plus-power factor proved highly effective on the important drilling project shown above, where 2000 yards of rock required quick removal.

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"He suggested switching from rivets to high strength bolts. They cost more than rivets initially, but the assembled cost is much lower. My men work faster than with rivets. The building goes up faster."

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pression, the council recommends that the lower yield point be considered as the limiting value of P/A.

The research group also calls attention to a significant practical difference between the Euler and tangent-modulus formulas. The Euler formula can be solved directly for the average stress corresponding to any given slenderness ratio (L/r); the tangent-modulus formula cannot. It requires a solution by trial and error, based on the metal's stress-strain curve.

• **Not for design**—The council does not advocate use of the formula in design. It proposes it merely as a basis for relating the compressive stress-strain properties of materials to the column strength of the material.

Further information and references to supporting data may be obtained from the Secretary of the Column Research Council, Mr. Lynn Beedle, assistant to the director, Fritz Engineering Laboratory, Lehigh University, Bethlehem, Pa.

Floor research shows importance of nailing

Emphasis on the importance of proper nailing in providing a long period of satisfactory service for hard maple flooring is the principal result of a year of research at the wood products laboratory of the Timken Engineering Co., Washington, D. C.

The research was conducted by the Research Committee of the Maple Flooring Manufacturers Association, the objective being to develop practices that would provide top service for Northern hard maple flooring.

The investigation emphasizes the probability of inadequate nailing as a cause for unsatisfactory flooring.

This research is to be continued at the company's laboratory.

Atomic research group is set up by the AEC

The Atomic Energy Commission has set up an Office of Industrial Development aimed at coordinating industry and government-advances in the field of atomic research.

The office, which begins work immediately, will be under the direction of William Lee Davidson, former director of physical research for the B. F. Goodrich Co., Akron, Ohio.

M. W. Boyer, AEC general manager, said the immediate work of the new office will be aimed at setting in motion "an intensive effort" to assist

(*Continued on page 78*)

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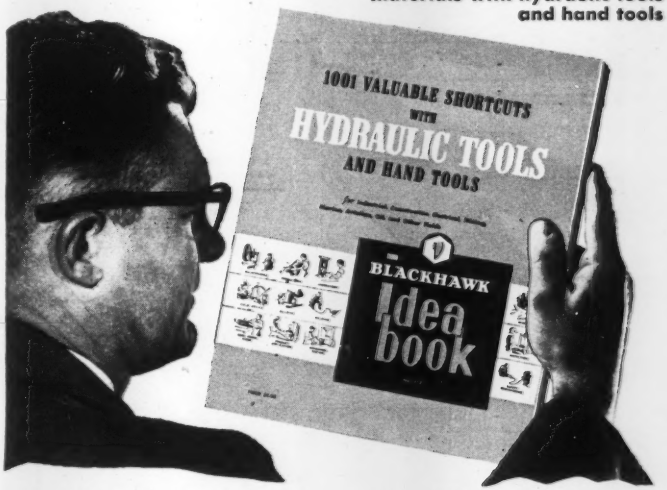
1001 shortcuts to save you time . . . money . . . materials with hydraulic tools and hand tools



Here's the greatest collection of ideas ever compiled on new uses for hydraulic tools and hand tools. The IDEA BOOK gives you the benefit of ideas developed and applied by hundreds of users of Blackhawk equipment. Most important, the IDEA BOOK will stimulate you to create *your own* ideas . . . will show how Blackhawk equipment can solve special problems for you! So — *send for it!* You'll want to read every page — you may find a "gold mine" in any *one* picture.

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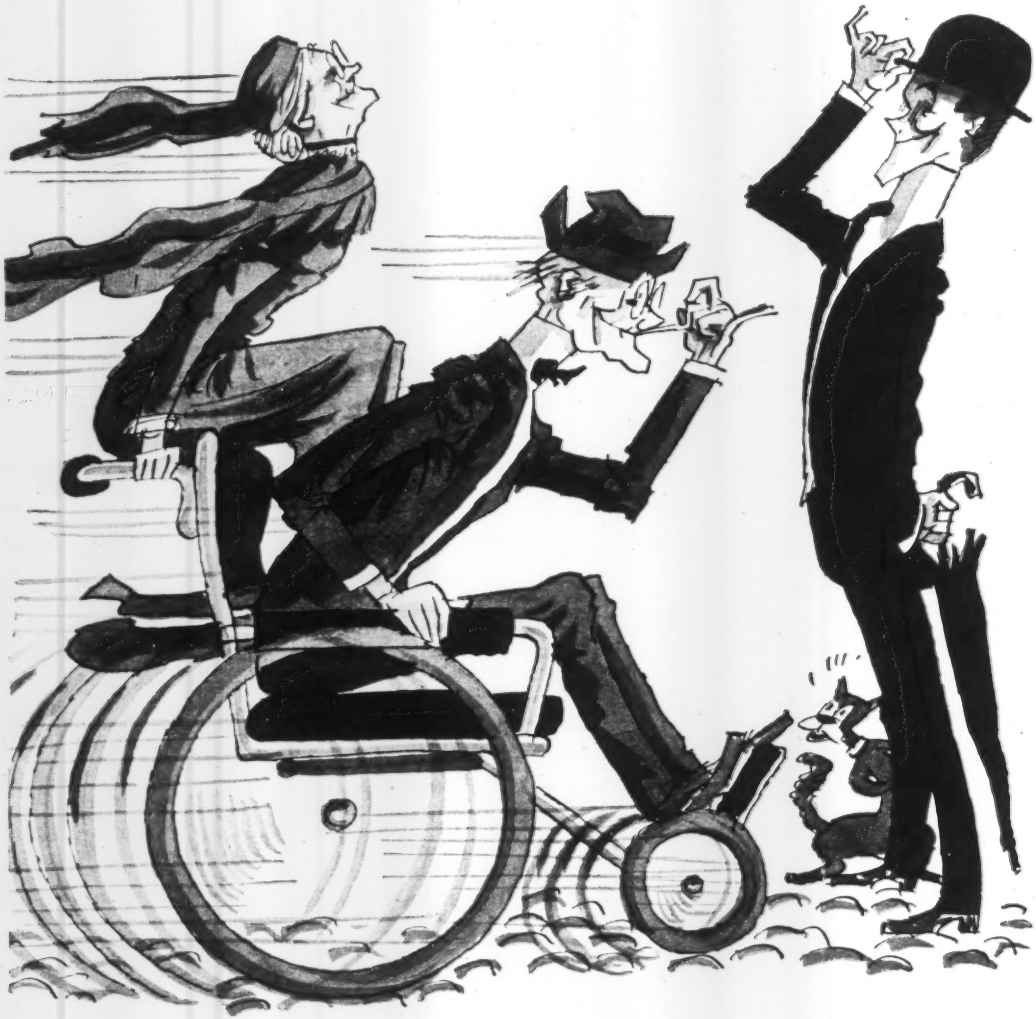

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By Mr. Friendly

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White-haired people of sixty or more.
They weep reverent tears . . . they sigh and they sob,
But *get them to give an old person a job!*

To handicapped men they're sweet as can be,
But who can *eat well on pure sympathy?*

And many young men of sixty or so
Can make an old man of twenty seem slow.
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Better work than the man who pities him most!

Here's a fact or two to *prove* it's true!

THE CASE OF THE FARGO WIRE CONNECTORS COMPANY

Policyholder: Fargo Mfg. Company, Inc. of Poughkeepsie, N. Y., makers of wire and cable connectors for public utilities.

Employees: 50% "Grandpops" as well as many so-called "handicaps."

American Mutual Service: Helped set up training programs . . . helped install every possible mechanical safety device. Result: A much higher rate of production than average, higher morale, lower absenteeism and a lower accident rate!

Moral: If you're interested in all details of this outstanding case history . . . write American Mutual Liability Insurance Co., Dept. O-114, 142 Berkeley St., Boston 16, Mass.

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Above is a typical city and some of its many different buildings equipped with Kinnear Rolling doors. In similar industrial, commercial and public buildings *throughout the world*, the famous interlocking steel-slat door (originated by Kinnear) has proved its many advantages. Coiling out of the way with smooth, vertical action, it offers maximum efficiency, protection, long service life and low maintenance. Users have found this increasingly true through more than half a century. Your free copy of this new catalog will give you latest, complete details on Kinnear Rolling Doors. Send for it today!

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SAVING WAYS in DOORWAYS
KINNEAR ROLLING DOORS

in this nation's defense program.

But, Boyer said, the office "has important long range implications, looking to the day when industry will carry on its own a substantial part of the national atomic energy program."

AEC's industrial development planning, Boyer said, involves "A two-way exchange" in which industrial scientists help the government and receive similar help from the AEC.

Boyer said the AEC hopes to set up wherever possible "a more normal competitive approach to the problems and potentials of the atomic energy business."

Mr. Davidson is a graduate of William and Mary College and co-author of "applied nuclear physics." He worked with the Monsanto Chemical Co., before joining Goodrich and did some field work in atomic energy at the government's Oak Ridge, Tenn. laboratories.

Concrete additive seen disease preventative

Built-in protection against catching "athlete's foot" around swimming pools, locker rooms, and showers is suggested as the result of research at the Battelle Memorial Institute, Columbus, Ohio.

Biologist R. F. Robinson says:

"Our investigations have shown that concrete containing 10 per cent copper acetoarsenite can be very effective in preventing the growth of the mold, 'epidermophyton interdigitale'. This mold is known to be among the causes of athlete's foot."

The exact life of the fungicidal copper compound in showers and around swimming pools, where it is subjected to leaching or washing away by large quantities of water, is not yet known. Leaching tests indicate, however, that the compound should remain fungicidal for two or three years, and possibly for a much longer time.

• **Gold Coast aluminum**—There is a plan on foot to make the Gold Coast in Africa one of the world's largest producers of aluminum. Representatives of the British government, the British Aluminum Co. and Aluminium, Ltd., of Montreal have been at Accra discussing the Volta River project, the main object of which is to harness the power of the 1,000-mile-long Volta River for the production of aluminum. The Gold Coast has estimated reserves of 225 million tons of bauxite.

What every highway engineer should know about the Maryland Test Road

Not a single structural crack developed in any of the 28 forty-foot concrete slabs built on non-pumping, granular subbase

The Maryland Test Road, 1.1 miles long on U. S. 301, was a two-lane concrete pavement of 9″–7″–9″ section. When it was built in 1941 pumping had not become a problem. Consequently most of the concrete pavement was placed directly on the natural fine-grained subgrade. However there was a non-pumping, granular subbase under 28 forty-foot slabs.

For nine years the pavement in this test section carried all normal traffic *plus* the heavy wartime traffic. Then for six months the pavement was subjected to accelerated truck traffic equivalent to at least 20 years of normal traffic on this road. Yet the 28 slabs on granular subbase carried 238,000 trips by trucks with single axle loads of 18,000 lb. in one section and 22,400 lb. in another section without any structural cracks. These slabs are in as good condition as when opened to traffic.

Since the Maryland Test Road was built a decade ago there have been many improvements in concrete pavement design and construction. With today's knowledge of soils, highway engineers can determine subgrade bearing values and any tendency of soils to pump. A thin insulating layer of granular material, where needed, will prevent pumping.

Thus the engineer can design a concrete pavement that will give unexcelled service under an unlimited number of legal axle loads and render this service at ***lower annual cost*** *than any other pavement.*

PORTLAND CEMENT ASSOCIATION
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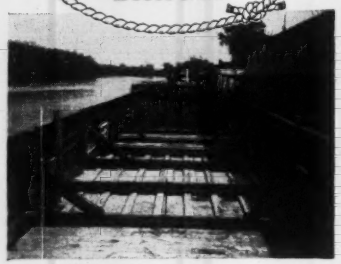
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work.

31 years on the river

BUT NO DECAY IN THESE WOODEN BARGES



IN 31 YEARS of hard service, this barge, made of Koppers Pressure-Creosoted Wood, has never required repairs because of decay.

● In 1921 the Ayer & Lord Tie Co. built a fleet of barges for hauling cross ties by river from Paducah, Kentucky to Brookport, Illinois. To be sure their barges would be resistant to decay as well as physically strong, Ayer & Lord built them with pressure-creosoted wood.

Today, after 31 years, these barges are still in regular service, and in all that time, *no wood has been removed because of decay.*

PERMANENCE AT LOW COST

Koppers pressure treatment forces creosote deep into the wood and protects it from marine borers, insects and decay. It will not spall or corrode. And this improved wood costs less than other permanent construction materials.

For more information on Koppers Pressure-Creosoted Wood, write today to Koppers Company, Inc., Pittsburgh 19, Pennsylvania.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS PRESSURE-TREATED WOOD

INTERNATIONAL

EILDON DAM WORK AT PRESENT—An aerial view of the works area at Eildon. It shows the existing reservoir, several access roads and excavations for the new dam that will replace old Eildon Wier in Australia.

See Australian economy action slowing work on new Eildon Dam

An economy move by the Australian federal government has slowed work on the raising of huge Eildon Weir in the State of Victoria.

The government's action cut down allocation of funds to Victoria to pay for work on the dam under a contract held by Utah Construction Co.—with the result that state government officials see their own costs increasing under the cost-plus-fixed-fee contract.

As a result of the shortage of funds, a 40-hour working week has replaced a 54-hour week (overtime), and hundreds of workers have been dismissed. Valuable construction machinery is idle and the completion of the dam is now expected to be delayed till 1958. U. S. technicians are retained.

Steady progress was being made by the Utah Construction Co. on the $25-million contract for the giant Eildon Dam on the Goulburn River in Victoria, Australia, (ENR May 1, '50, p. 50). The American company already has $3 million worth of equipment on the job and was giving employment to many hundreds of workers when the economy axe fell.

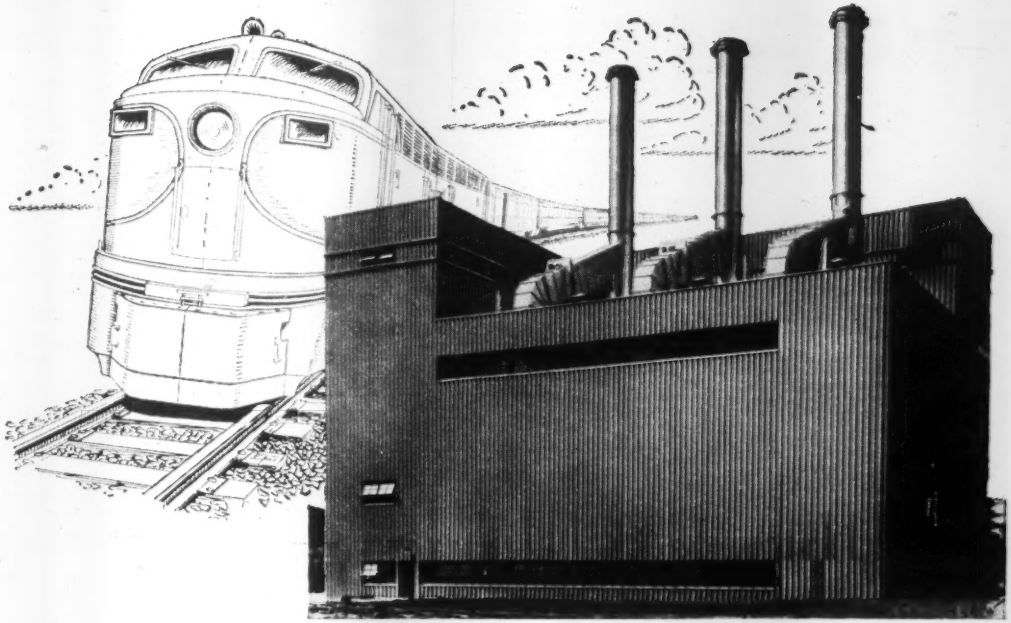
This earthen dam, with its 13 million cu yd of earth and rock fill, and 300,000 cu yd of concrete work, is replacing the former Eildon Wier. It is being built to conserve water in the Goulburn Valley, and will have a maximum height of 260 ft, and a capacity of 2,350,000 acre-ft compared with the 300,000 acre-ft of the old Eildon Wier. A pondage wier is also being built three miles below the site of the dam.

The Goulburn River rises in the Great Divide which bisects the State of Victoria. Eventually the Big Eildon project will double the amount of irrigated land in that area.

The new dam also will be used for hydro-electric power. In fact, Big Eildon is the latest development in a huge power grid under construction that is designed to serve the whole east coast of Australia.

Utah Construction Co. began its work on Eildon in June, 1951, and the job was to have been finished in September 1955.

(*International continued on p. 82*)



Steam generating plant of Fairbanks, Morse & Co., Beloit, Wisconsin.

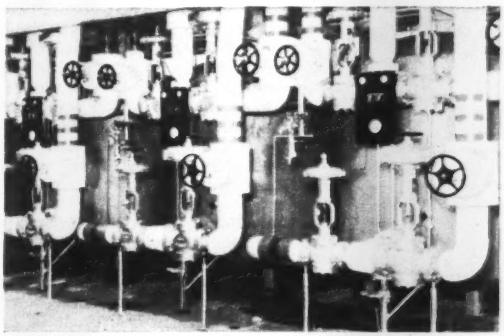
STEAM POWER TO BUILD DIESEL POWER

World famous diesel locomotive manufacturers, Fairbanks, Morse & Co., employed Stone & Webster Engineering Corporation to design and construct a new steam generating plant.

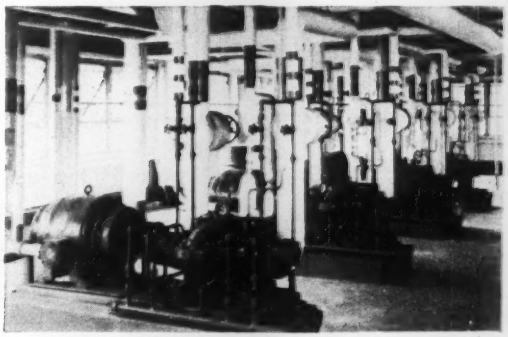
Designed for rapid changes in steam demand, up to the heaviest processing loads, the new plant yields substantial fuel savings of $600 to $650 per day, and provides complete continuity of service.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY *of* STONE & WEBSTER, INC.



Completeness of instrumentation throughout is indicated by this view of the water treatment system.



Boiler feed pumps and facilities are of unusual capacity because of the heavy steam demand.

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Dual springs, long guides. Pressure-oiled rockers. Stellite-faced valves and seats.

American Bosch single-hole pintle nozzles.

Clean-burning combustion chamber removes from outside. Upper half water cooled, lower half air insulated to concentrate heat at throat.

Four non-stick "keystone" rings, top ring chrome-plated. Two flat oil rings.

Built-in oil cooler increases oil and engine life.

Full length water jackets.

Hardened renewable cylinder sleeves test 375-425 Brinell.

Rifle-drilled rods. Oil jets cool pistons.

American Bosch fuel injection pump.

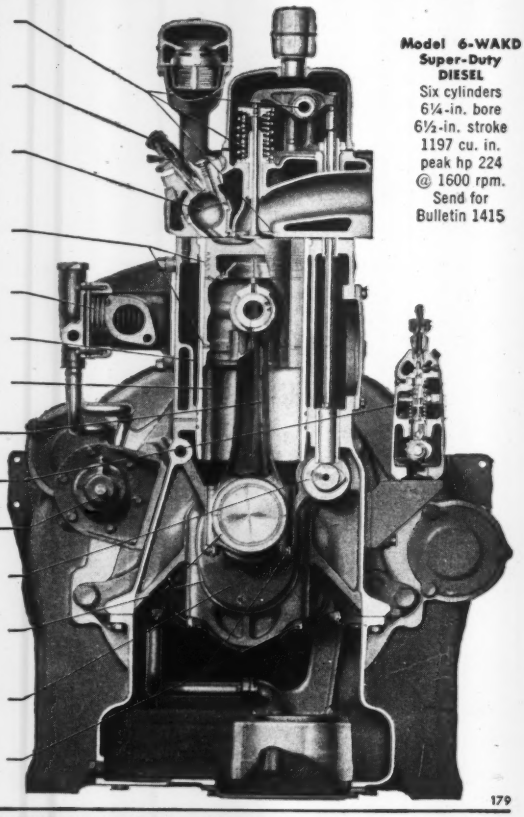
High-capacity outside oil pump.

Hardened camshaft, single forging.

Hardened main and rod journals. Steel-back, triple-element precision bearings, pressure oiled.

Drop-forged hardened crankshaft. High-speed counterweights not shown.

Alloy-steel heat-treated rod and main bearing bolts.



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1197 cu. in.
peak hp 224
@ 1600 rpm.
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179

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS., NEW YORK, TULSA, LOS ANGELES

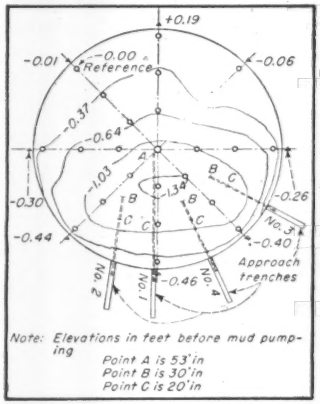
INTERNATIONAL

• **Replacement housing in Ecuador**—Raymond D. Wygant, formerly field representative with the Housing and Home Finance Agency, Washington, has gone to Quito, Ecuador, to supervise the building of new housing in the earthquake area around Ambato. The Export-Import Bank will lend $800,000 to the Ecuadorian government to buy materials in the United States for this work. Mr. Wygant will be housing consultant with the Division of Health, Welfare and Housing of the Institute of Inter-American Affairs, a U. S. Government Point 4 agency.

• **Guaranties against expropriation**—The Mutual Security Agency has announced that agreements have been made with Austria, Denmark, Greece, France, Italy and Norway giving guaranties against investment loss from expropriation. In addition, agreements covering both currency convertibility and expropriation have been negotiated with Belgium and Formosa. Private enterprise, heretofore, frequently has been unwilling to venture abroad in the face of abnormal risks. "Now," says Howard Mattingly, chief of MSA's industrial guaranties branch, "Government, in order to encourage capital to play its normal part in the free world's peace effort, is prepared to assume the two major risks which American industry faces in foreign operations—expropriation (the action of a state in taking or modifying the property rights of individuals); and inconvertibility of foreign currency."

• **Argentine express highways**—The Argentine national highway department has asked for bids on the planning, financing and construction of two toll express highways to connect the federal capital with the cities of Rosario to the north and Mar del Plata to the south. Toll roads hitherto have never been used in Argentina and special legislation must be passed before the system can be adopted. The department proposed to grant a 30-year toll concession to the builder, at the end of which time the roads would become the property of the state. The cost of each project is officially set at $20 million.

• **Correction**—The New York City consulting engineering firm of Knappen-Tippetts-Abbett-McCarthy is consulting engineer on a stretch of 188 mi of highway between Cochabamba and Santa Cruz, in Bolivia. ENR erroneously reported (ENR June 19, p. 85) that the Raymond Concrete Pile Co. was consultant.



CONTOUR LINES show what sag in tank bottom looked like. Mud, inserted along the dotted lines, corrected the sag. Circles are roof-leg locations.

INJECTION PIPE, with mud-jack hose attached, operates in outsize hole reamed by fins at the pipe's forward end.

Horizontal mud-jacking re-supports tank bottom

Mud-jacking—with injection pipes horizontal—saved the Mid-Valley Pipeline Co. time and money in taking the sag out of the steel bottom of one of its 110-ft dia, 48-ft high, crude oil tanks. When full, as they frequently are, these tanks are 11,000-ton structures.

The mud-jacking job, which cost $2,000, was adopted in preference to floating the tank away from its site and rebuilding the grade.

Soundings through leg holes of the floating roof showed a bottom sag in excess of one foot. This sag was enough to stress the plates dangerously.

The sag was eliminated by inserting mud injection pipes to the depths shown on the drawing, gradually withdrawing them as the tank-bottom rose. Restoration progress was observed on the 24 roof legs. The legs were unpinned and allowed to rest on the bottom. This way, they rode freely up and down in their roof holes, while the roof floated on 4 ft. of crude oil in the tank. The fact that it was not necessary to empty and clean the tank is important to the economy achieved here.

The mud-pump contractor, L. C. Pope of the Vicksburg Machine Co., Vicksburg, Miss., had done some mud-jacking of concrete slabs by horizontal injecting. Here's how he got his injection pipe in.

He dug an approach trench 25 ft. long (see drawing) to handle 20-ft. lengths of 1¼ or 1½-in. pipe. Then he rotated the pipe with an air-rotary drill, at the same time jetting water or an air-water mix through the pipe. Three fins at the head end made the hole bigger than the pipe, so it wouldn't stick. One man shoved the pipe in as boring progressed. The first entry pipe went in 53 ft in 30 minutes. Twice the wings hit the tank's underside, but a little preliminary mud-jacking lifted the bottom clear.

Full-scale mud-jacking started at point A (see drawing) then it was done in succession for the B positions and similarly for the C positions.

Pipes were withdrawn at the end of a day's work, being reinserted the next morning. Mud pump output varied from 10 to 15 cu. yd. per day and total yardage was 90. Four or more sacks of portland cement were mixed with each yard of dry soil.

Final measurements showed that all of the tank's bottom was at or above El 0. Highest was El + 0.68, but there were no abrupt variations.—JOHN MONTFORT, *Mid-Valley Pipeline Co., Longview, Texas.*

ANY SUGGESTIONS?

We would like to hear of interesting new devices and methods devised by our readers to speed up and simplify field work; or of new techniques intended to simplify design computations. We will pay for published items, so send your suggestions to ENR's Field and Office Editor at 330 W. 42nd St., New York 36, N. Y.

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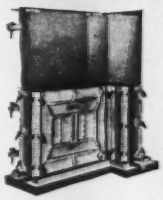

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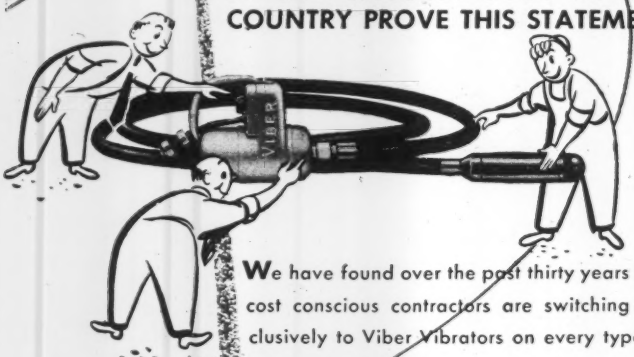

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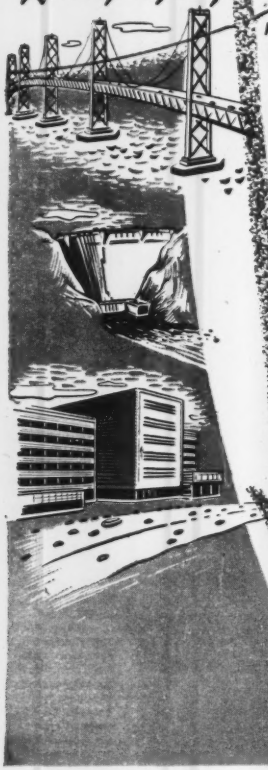
Knowing why may save you construction time and expense



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LEGAL

Lack of owner's signature does not invalidate contract

A contract to furnish labor and materials for the improvement of a building contained a provision that the contract was not to be binding until it was signed by an officer of the corporation that owned the building. After the contractor had signed but before an officer had signed, the contractor was directed to proceed with and did perform the work without the contract having been signed by an officer of the owner corporation.

The owner subsequently refused payment, and the contractor brought an action under the contract to recover the same. The contractor was allowed a recovery, the court holding that upon performance of the work the contract became enforceable even though it never had been signed by the officer of the corporation.[1]

(1) Jones v Logan Co., Inc. 68 S. E. 2d 718 (Court of Appeals of Georgia, Jan. 23, 1952.)

Maximum cost of work

Where the contract does not set forth any specific price for doing the work but does set forth a definite sum as its maximum cost, the contractor is not entitled to compensation in excess of the specified maximum cost.[1]

The court in its opinion referred to another case[2] where a building contractor entered into a contract for the making of certain alterations and improvements upon a house. The contract was indefinite as to price but provided that the cost would not exceed $1,500. The court allowed the contractor a recovery for the reasonable value of the work done and materials furnished, but such recovery was restricted within the limit of the maximum sum of $1,500 set forth in the contract.

(1) Higby v Hooper, 221 P. 2d 1043, Supreme Court of Montana, Aug. 28, 1950, citing 17 C.J.S., Contracts, section 367, pp. 826, 827, notes 70, 71 and 74.
(2) Kennedy v McKone, 10 App. Div. 88, 41 N.Y.S. 782.

Substantial performance

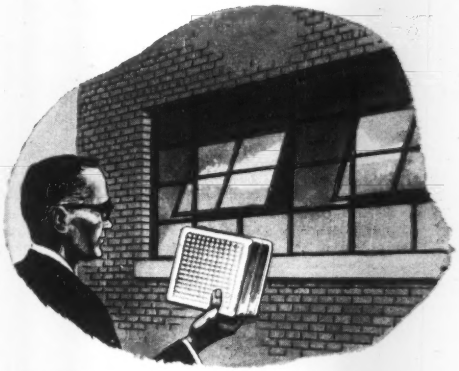
It is well settled that when a contractor has substantially performed his work, even though it may be defective or unfinished, the owner's only remedy is for a reduction of price to the extent of the damages sustained by reason of the defective performance of the contract.[1]

The above rule, which permits a

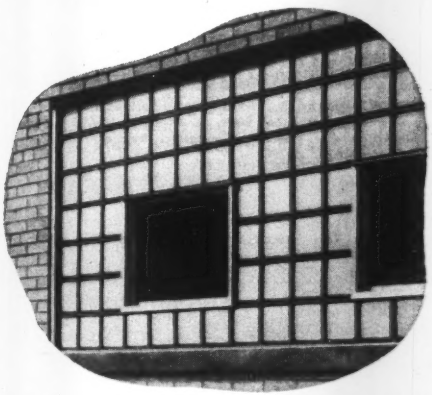
FACTS YOU SHOULD KNOW ABOUT

vision-lighting plan

WITH PITTSBURGH CORNING GLASS BLOCKS



QUESTION . . . How can we provide our employees with the advantages of PC Glass Block panels, yet permit ventilation and a clear view of the outside?



ANSWER . . . The *PC Vision-Lighting Plan*—consisting of PC Functional Glass Block panels with vision-ventilation areas—was especially developed to meet this need. It provides abundant, controlled daylighting, a high degree of ventilation and "see-ability."

Pittsburgh Corning developed its *PC Vision-Lighting Plan* to provide an effective system combining the high insulating value of PC Glass Blocks with controlled daylighting, adequate ventilation and clear vision to the outside.

This plan is ideal—for offices, factory buildings, laboratories and other structures—where solid panels of glass blocks are impractical, such as in poorly ventilated and non-air-conditioned rooms. Also, it helps promote worker efficiency, reduces eye fatigue; avoids that "shut-in" feeling on the part of employees.

Vision-ventilation areas may be of clear-glazed sash, or transparent PC Vue Glass Blocks may be combined with ventilating units. Standard sash and frames are available from many sash manufacturers for this purpose.

If you are contemplating new building, or are faced with the need for sash replacement, let our specialists help you provide the best possible daylighting system. There is no obligation on your part.

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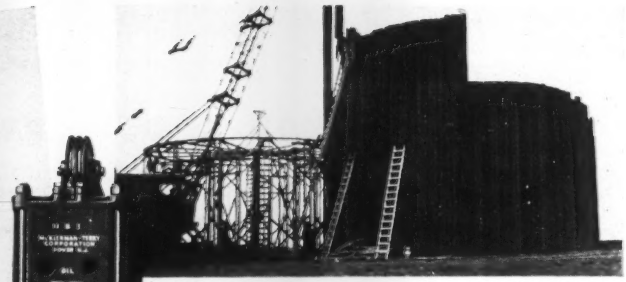
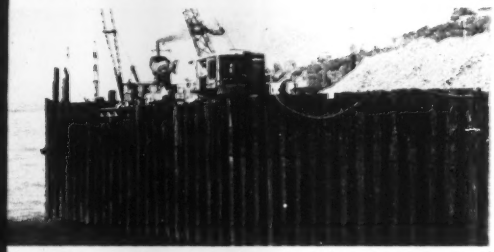
reports on

PILEDRIVING

along the St. Lawrence River

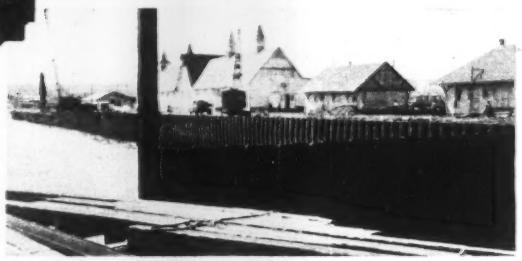


BEAUHARNOIS—Straight web steel pile section being lifted in place before being driven by a McKiernan-Terry 8-type Double-Acting Hammer. This is one of six cells at Beauharnois, Quebec, designed and constructed by the Beauharnois Light, Heat and Power Company.



LEVIS — A McKiernan-Terry 9-B-3 Double-Acting Hammer drove more than 2000 tons of 93-foot butt-welded steel piles for a reconstructed wharf at Levis, Quebec. Contractor: McNamara Construction Co. Limited of Toronto.

In Canada, as in the United States and throughout the world, McKiernan-Terry Pile Hammers are the first choice of contractors. They rely on the power and dependability of McKiernan-Terry equipment for speedy, profitable piledriving for foundations of buildings, bridges, dams, waterways, and harbor improvements and other projects. They can select the hammer or extractor that best suits their needs from a wide-range line of 16 sizes of double-acting and single-acting hammers and 2 sizes of double-acting extractors. Catalog gives full details. Write for your copy.



RIMOUSKI—This is the reconstructed wharf at Rimouski, Quebec where steel pile sections were driven by a McKiernan-Terry S-3 Single-Acting Pile Hammer. Contractor: Royalmount Construction Limited, Montreal.

OTHER McKIERNAN-TERRY PRODUCTS

MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
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Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

MATANE—2300 tons of steel piles were driven quickly with a McKiernan-Terry 11-B-3 Double-Acting Pile Hammer to reconstruct the inner harbor at Matane, Quebec. Contractor: North Shore Construction Co. Ltd., Montreal.

Photographs courtesy of Algoma Steel Corporation, Ltd., Sault Ste. Marie, Ontario, whose steel piles were used in these installations.

MK-320

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contractor to recover even though the work is not completed, should be applied with caution. The case was in Louisiana where, by a special statute, a contractor who fails to perform a contract can recover the value of the work done that inures to the benefit of the owner even though the work was defective.[2]

The more general rule was set forth in another recent case[3] as follows: "Substantial performance of such contracts will support a recovery either on the contract or on a quantum meruit [fair and reasonable value] basis, provided the contractor has acted in good faith and has not carelessly or intentionally failed to perform the contract; that substantial performance is not literal, full or exact performance in every slight or unimportant detail, but performance of all important particulars; and that substantial performance exists where the building or structure as a whole is not impaired, where it can be used for its intended purpose after erection, where the defects can be remedied without any great expenditure and without material damage to other parts of the structure and may without injustice be compensated for by deductions from the contract price".

(1) Esposito v D'Assaro, 49 So. 2d 356, Court of Appeals of Louisiana, Dec. 11, 1950, and numerous cases there cited.
(2) Bouterie v Carre, 6 So. 2d 218.
(3) Hardin v Beaman, 49 So. 2d 732, Supreme Court of Mississippi, Jan. 8, 1951, quoting from Standard Millwork & Supply Co. v Mississippi Steel & Iron Co., 205 Miss. 96, 38 So. 2d 448.

Construction of contracts

The parties are bound by the plain terms of their contract and where its terms are openly and fairly arrived at, enforcement of the agreement will not be denied because of hardship to one of the parties.[1]

"In every contract there is an implied covenant of good faith and fair dealing that neither party will do anything which injures the right of the other to receive the benefits of the agreement."[2]

A mere improvident contract supplies no basis for equitable relief.[3]

Those terms will be implied as a part of a contract that are so necessarily involved in contractual relationship that parties must have intended them, and failed to express them only because they were too obvious to need expression.[4]

"It is a fundamental and well recognized rule that in construing contracts, courts must look not only to the specific language employed, but also to the subject matter contracted about, the circumstances surrounding the transaction, or in other words, place themselves in the same position the parties occupied when the

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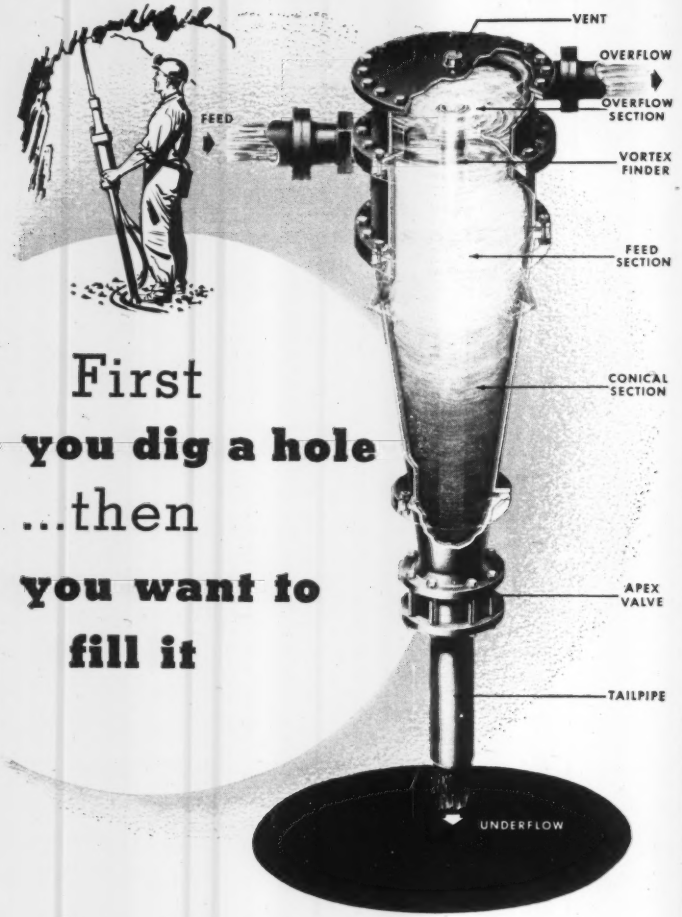

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contract was entered into, and view the terms and intent of the agreement in the same light in which the parties did when the same was formulated and accepted."[3]

The meaning of a contract must be ascertained from the words used therein and if the language is ambiguous, then the intent of the parties must be ascertained by their actions.[4]

When a written contract contains two repugnant provisions, one written and one printed, the written one prevails. This rule is applied with greater liberality where it appears that the printed matter is in obscure type or placed where it would not be likely to be seen or where the printed matter was evidently not intended to be incorporated in the contract.[5]

"Courts cannot make new contracts for parties or give those already made a strained construction. . . . The intent of the parties must be found from the language employed and a trial for the development of the facts would serve no useful purpose. . . . If the contract as signed does not clearly express the agreement of the parties, that may be a reason why it should be reformed, but, until reformed, it is the duty of the court to enforce it according to its terms".[6]

"A contract must be considered in its entirety, and the intention of the parties must be determined from the entire instrument and not from some detached portion [Citing authorities]. A written instrument must be read as a whole and every part of it interpreted with reference to the whole so as to give effect to its general purpose [citing authorities]. The meaning of a writing may be distorted where undue force is given to single words or phrases. The writing must be read as a whole and each clause given its intended meaning in promotion of the primary purpose of the writing.

"The intention of the parties must be sought for in the language used. To understand the language, the parties who undertake to interpret contracts should put themselves in the place of those who wrote the contract and discern, if possible, the objects they had in view, and the motives which dictated their choice of words."[7]

(1) Hiller v Submarine Signal Co., 91 N.E. 2d 667.
(2) Wilson v Wilson, 216 P. 2d 104.
(3) Hunt v Davis, 45 So. 2d 350.
(4) Bromer v Florida Power & Light Co., 45 So. 2d 618.
(5) Cohen v Johnson, 91 F. Supp. 231.
(6) Zellan v Colen, 183 F. 2d 139.
(7) In re Gotham Silver Co., 91 F. Supp. 520.
(8) Barrand v Quinn et al., 98 N.Y.S. 2d 1013.
(9) Delaware County Elec. Coop. v City of New York, 99 N.Y.S. 2d 42.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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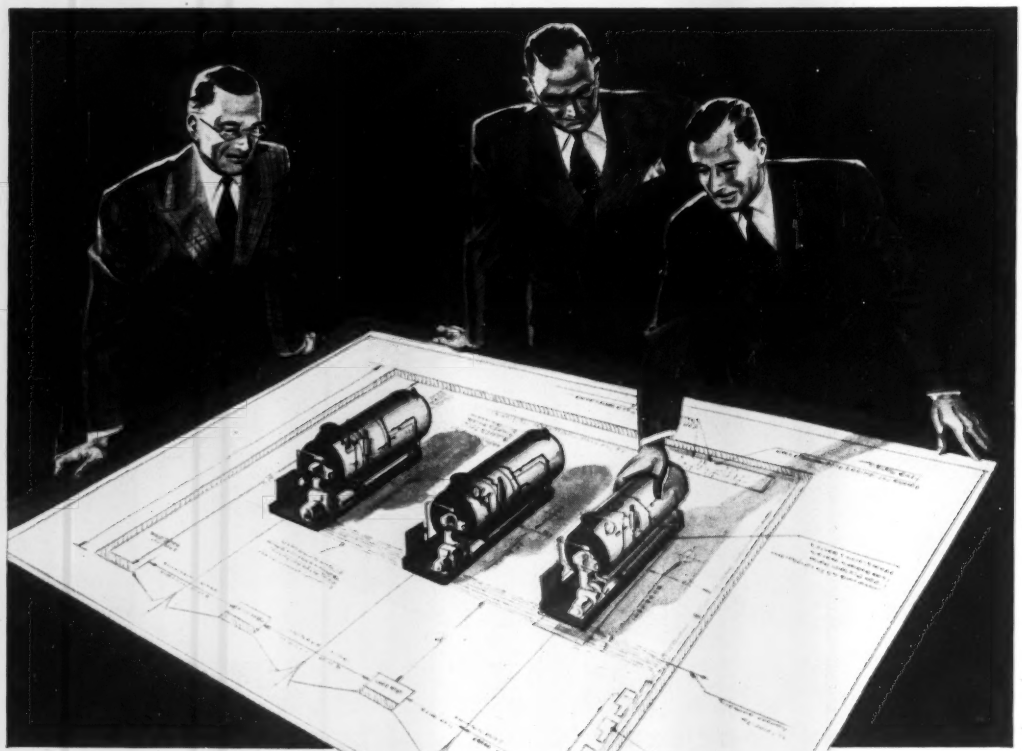

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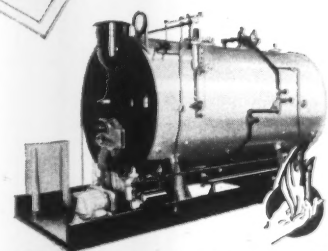

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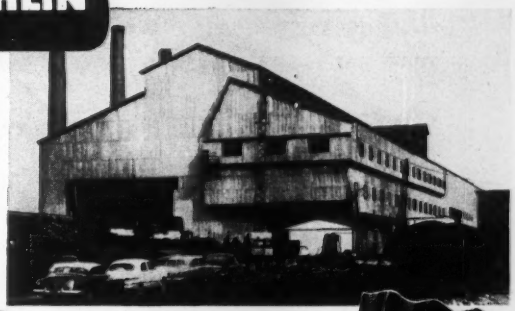

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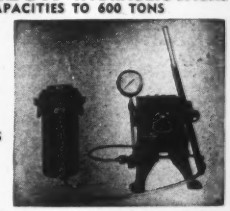

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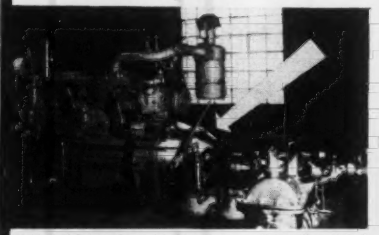

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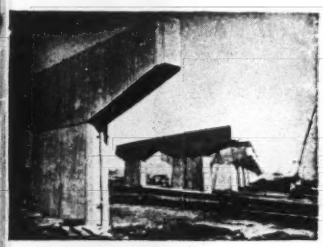

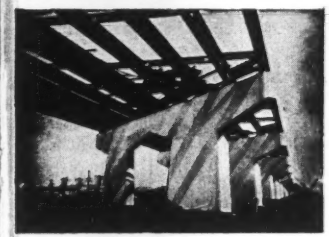

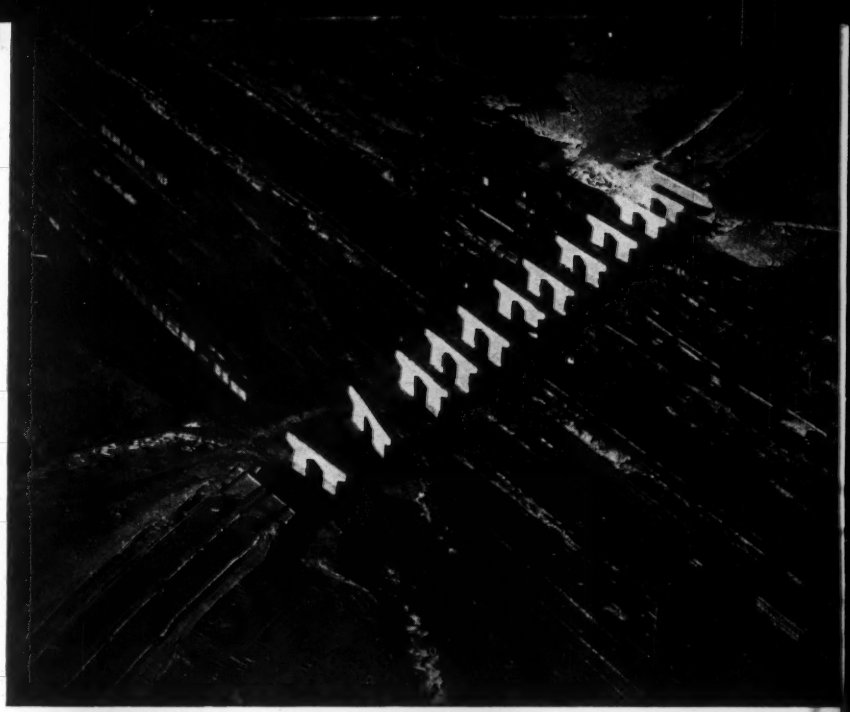

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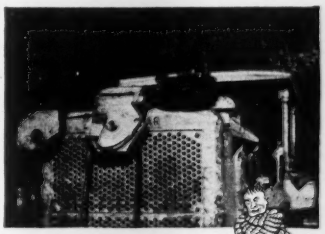

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(Continued from p. 92)

WITH PERFORMANCE OF PORTLAND CEMENT CONCRETE—By K. B. Woods. Circular No. 49, National Sand and Gravel Association, 1325 E. Street N. W., Washington 4, D. C.

A PROPOSED HOUSING ORDINANCE REGULATING SUPPLIED FACILITIES, MAINTENANCE, AND OCCUPANCY OF DWELLINGS AND DWELLING UNITS—By American Public Health Association Inc., 1790 Broadway, New York 19, N. Y. $.50.

THE RECONSTRUCTION OF THE BROOKLYN BRIDGE—By D. B. Steinman and J. London. Reprinted from the Municipal Engineers Journal. The Municipal Engineers of the City of New York, 29 W. 39th St., New York, N. Y.

PERMAFROST—By Karl Terzaghi. Harvard Soil Mechanics Series, No. 37. Pierce Hall, Harvard University, Cambridge, Mass.

RECOMMENDATIONS FOR BITUMINOUS SURFACINGS FOR ROADS CARRYING TRACKED VEHICLES—Road Note No. 13, Road Research Laboratory, Dept. of Science and Industrial Research, Harmondsworth, Middlesex, England.

THE SUCTION OF MOISTURE HELD IN SOIL AND OTHER POROUS MATERIALS—Road Research Technical Paper No. 24, Road Research Laboratory, Department of Scientific and Industrial Research, Harmondsworth, Middlesex, England. $.50.

DEFORMATIONS OF REINFORCED CONCRETE—International Association For Bridge and Structural Engineering, Zurich, Switzerland.

INITIALLY DEFLECTED THIN PLATE WITH INITIAL DEFLECTION AFFINE TO ADDITIONAL DEFLECTION—International Association For Bridge and Structural Engineering, Zurich, Switzerland.

COMBINED BENDING AND TORSION OF I BEAMS OF MONOSYMMETRICAL CROSS SECTION—A Non-Linear Theory Taking Into Account the Risk of Lateral Buckling. Bulletin No. 10, The Division of Building Statistics and Structural Engineering, The Royal Institute of Technology, Stockholm, Sweden.

AIR POLLUTION ABATEMENT MANUAL—Chapter 6, Sampling Procedures and Measuring Equipment. By Manufacturing Chemists' Association, Inc., 246 Woodward Bldg., 15th & H Sts. N. W., Washington 5, D. C. $.75.

WATER RESOURCES OF VIRGINIA—By the Advisory Council on The Virginia Economy, 301 State Finance Building, Richmond 19, Va.

PROCEEDINGS OF THE UNITED NATIONS SCIENTIFIC CONFERENCE ON THE CONSERVATION AND UTILIZATION OF RESOURCES (1949)—Volume IV, Water Resources, United Nations, New York, N. Y. $4.50.

EFFECT OF AGING ON THE SOUNDNESS OF REGULARLY HYDRATED DOLOMITIC LIME PUTTIES—National Bureau of

The tractor that burned like a blowtorch

(A true story, based on Hartford File #74651)

Our business is clearing land, so tractors are our bread and butter. We use five. One, fitted with angle dozer and power unit, had just been overhauled. It was insured for $16,000. Our driver, an experienced man, was pushing his job at a steady pace when *whoosh* – the whole machine flashed into a blaze.

It came so fast he was burned about the face before he could jump from the seat. He emptied his fire extinguisher at the flames, but in a minute or so came *whoosh No. 2.*

Our adjustor reconstructed what happened. The first flash, he figured, came from gasoline leaking from the starter tank and dripping on to the hot manifold.

The second blaze came when the tank of diesel fuel split in the heat and spilled 85 gallons under the tractor. It burned like a blowtorch, and melted all the small parts off of the machine.

Repairs came to $11,706. That was the amount we were paid by the Hartford Fire Insurance Company under our Contractors' Equipment policy.

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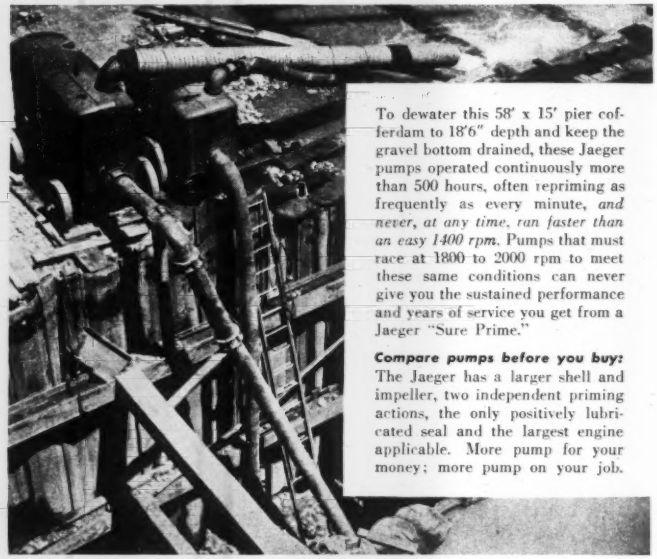

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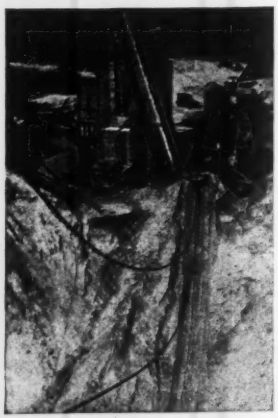

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Standards, Building Materials and Structures Report 127. Supt. of Documents, Washington 25, D. C. 15¢.

RING-JOINT GASKETS AND GROOVES FOR STEEL PIPE FLANGES—ASA B16.20-1952. American Society of Mechanical Engineers, 29 West 39th St., New York 18, N. Y. $1.00.

THOUGHTS AND THEORIES ON PENETRATION SURFACES—By Jerome P. Kearby. Obtainable from the author, Texas Highway Department, Decatur, Tex.

HIGHWAY STATISTICS, 1950—Bureau of Public Roads, Superintendent of Documents, Washington 25, D. C. 60¢.

LABORATORY DESIGN FOR HANDLING RADIOACTIVE MATERIALS—The Building Research Advisory Board, 2101 Constitution Avenue, Washington 25, D. C. $4.50.

MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES—ACI 315-51. American Concrete Institute. 18263 W. McNichols Road, Detroit 19, Mich. $3.00.

A GLOSSARY OF TERMS FOR ALUMINUM SHEET AND PLATE AND ALUMINUM EXTRUDED AND TUBULAR PRODUCTS—By The Aluminum Association, 420 Lexington Ave., New York 17, N. Y.

FROST ACTION IN SOILS—A Symposium. Special Report No. 2. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $3.75.

ENGINEERING SOIL SURVEY MAPPING—Bulletin No. 46. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $1.50.

SALVAGING OLD PAVEMENTS BY RESURFACING—Bulletin 47. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $.60.

RECOMMENDATIONS FOR TAR SURFACE DRESSINGS—Road Note No. 1, Road Research Laboratory, Department of Scientific and Industrial Research, Harmondsworth, Middlesex, England. 25¢.

STUDIES ON HOUSEHOLD SEWAGE DISPOSAL SYSTEMS—Part II, Septic Tank Compartmentation. Federal Security Agency, Public Health Service, Environmental Health Center, Cincinnati, O.

EFFECT OF CONTROLLED TRUCK AXLE LOADINGS ON HIGHWAYS—By Fred Burggraf. Circular No. 50, National Sand and Gravel Association, 1325 E. St., N. W., Washington 4, D. C.

CONCRETE PAVEMENTS—THEIR UTILITY AND THEIR FUTURE—By G. Donald Kennedy. Publication No. 41, National Ready Mixed Concrete Association, 1325 E Street, N. W., Washington 4, D. C.

NONMETALLIC GASKETS FOR PIPE FLANGES — ASA B16.21-1951, The American Society of Mechanical Engineers, 29 West 39th St., New York 18, N. Y. $1.00.

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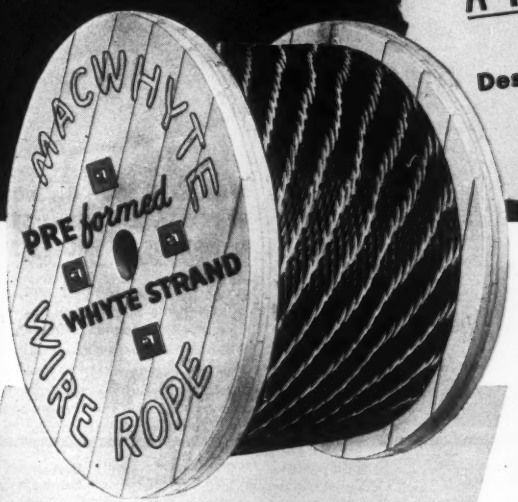

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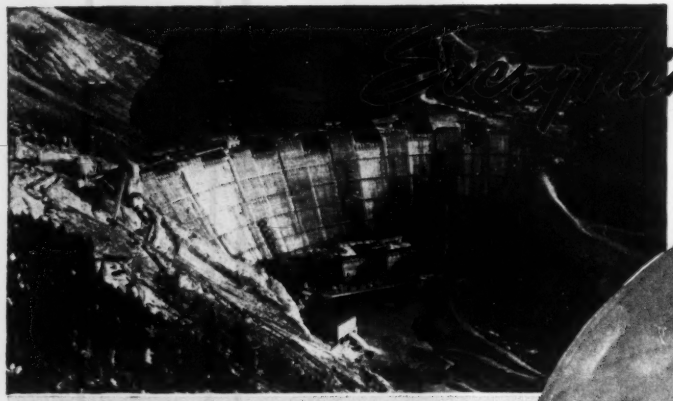

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International Airport, San Juan, Puerto Rico—This new stratocruiser and jet air field, constructed on filled-in marshland, used Protex air entrained concrete for smoother surface, easier finishing and greatly improved placeability. Constructed under the supervision of Puerto Rico's Transportation Authority, it's another example of how dollars were saved by the use of Protex.

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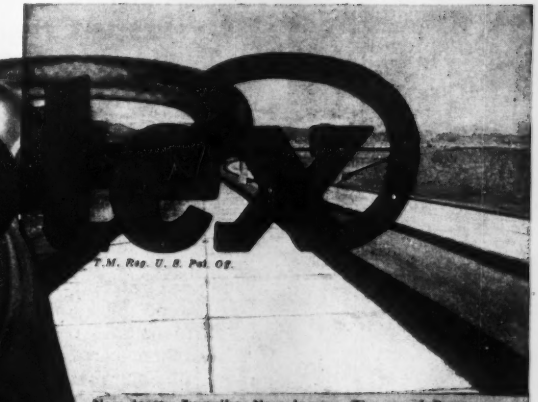

New Jersey Turnpike, New Jersey—The use of Protex in the New Jersey Turnpike, the Boulder Turnpike, and many others, provided us with another example of the versatility and widely accepted use of Protex everywhere.

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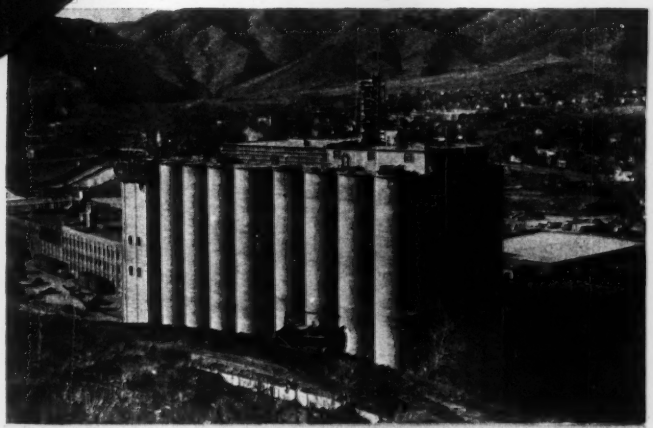

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OBITUARIES

T. Kennard Thomson, 88, died in Yonkers, N. Y., July 1. Born in Buffalo, N. Y., he was graduated from the University of Toronto in civil engineering. He gained his early experience in railroad construction. After several years of bridge engineering, he became chief engineer of Arthur McMullen Co. In this capacity he worked on more than 40 large New York buildings. From 1911 to 1914 he was a member of the Board of Consulting Engineers for the New York State Barge Canal. For many years he maintained his office as a consulting engineer at 50 Church St., New York. He held several patents for tunnel and lighthouse construction.

Paul F. Fitzer, 52, senior civil engineer, District 5, New York State Department of Public Works, died June 25. He had been employed in the district office for 25 years. He was in charge of design and plans for construction projects throughout western New York, including the Thruway east of Buffalo and the Southwestern Blvd. Born in Columbus, Ohio, he was a graduate in engineering from Ohio State University.

Lt. Col. George E. Louttit, 46, a civil engineer and a member of the Manilus School administrative staff, died June 24 on the school campus near Syracuse, N. Y.

Henry C. Fuldner, 77, a civil engineer and founder of the Fuldner Construction Co. which operated in Milwaukee, Wis., from 1902 to 1942, died June 19.

J. Gordon Lee, 56, died June 26 of a heart attack at his New Orleans home, after more than 30 years in the construction business. The contractor headed his own firm since 1937 and was contractor of numerous large buildings in the city. Born in Montgomery, Ala., he lived most his life in New Orleans.

Charles W. Riva, 51, president of the C. W. Riva Engineering Co., Providence, R. I., died June 26. Before establishing his own practice, he was superintendent of the J. J. Coughlin Engineering Co., and of Fay, Spofford & Thorndike, both of Boston.

Alan B. Wells, retired assistant treasurer and assistant secretary of the Universal Atlas Cement Co., a subsidiary of United States Steel, died June 21 at his East Orange, New Jersey, home.

(*Continued on page 104*)

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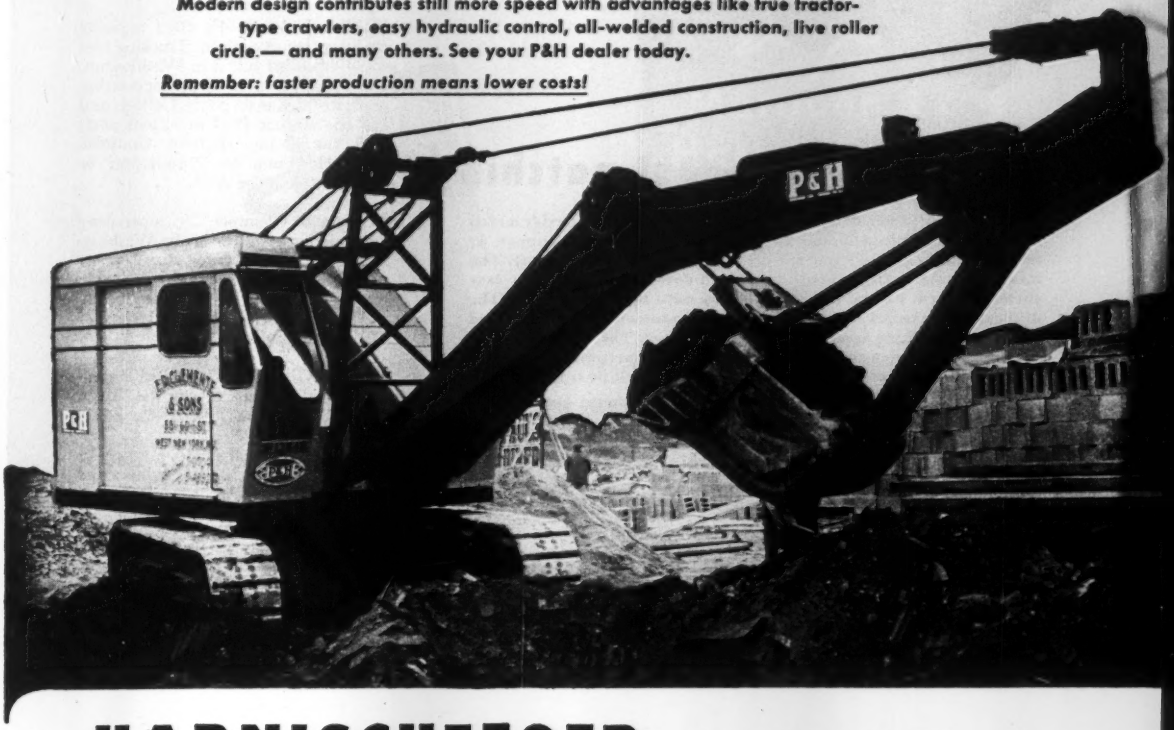

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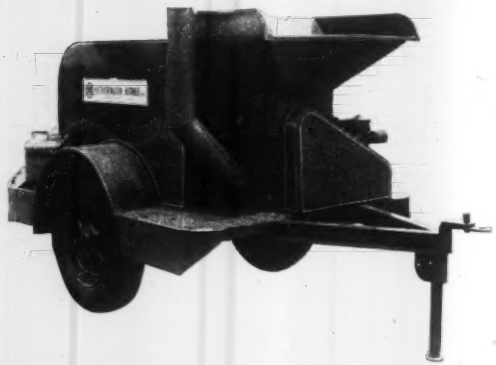

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OBITUARIES

Mr. Wells, born in Pittsburgh, began his career with U.S.S. in 1898. In 1909 he joined Universal Atlas. Shortly after coming to the company's New York office he was appointed assistant secretary.

Andrew G. Carely, building contractor of Wilkes-Barre, Pa., died June 26 at the age of 53. He has constructed many buildings in that area.

Theodore Brogioli, 65, of Quincy, Mass., for 30 years an engineer with Morton C. Tuttle Co., construction company, died.

William J. Arndt, 45, chief highway engineer for American Trucking Associations, died July 2 in Washington, D. C. He was a civil engineering graduate of Kansas State College and had served since 1931 in various posts with the Kansas Highway Commission. He came to Washington in January to join the ATA.

William B. Clemmer, 78, supervisory construction engineer in the Washington, D. C. district for many years, died July 4 at Wildercroft, Md. He was a member of the American Society of Civil Engineers and the Society of Military Engineers.

John B. Gineschi, 59, retired prominent building contractor in the Washington, D. C. area, died June 24 in Alexandria, Va.

Francis J. Clair, 62, civil engineer and once adviser on Agriculture Department projects including a large potato dehydration plant in Mississippi, died July 1 in Arlington, Va.

Col. Wayne L. Hauch, U. S. A. retired, one time commander of the 1263d Combat Engineers team in Europe, died June 24 near Silver Springs, Md.

William L. Sturdevant, 66, engineer, journalist and a member of the group that formed the initial nucleus of Tennessee Valley Authority, died July 1 in Boston. Educated in engineering at Allegheny College he began work with TVA 19 years ago as information director. Mr. Sturdevant also worked as a newspaper editor in New York and Ohio before joining TVA.

Waldo Griffiths, 63, a prominent Utica, N. Y., contractor died June 26. Associated with Griffiths and Pierce Contractors, he was elected the firm's vice president in 1914. In 1919 he became treasurer.

March 14, 1952

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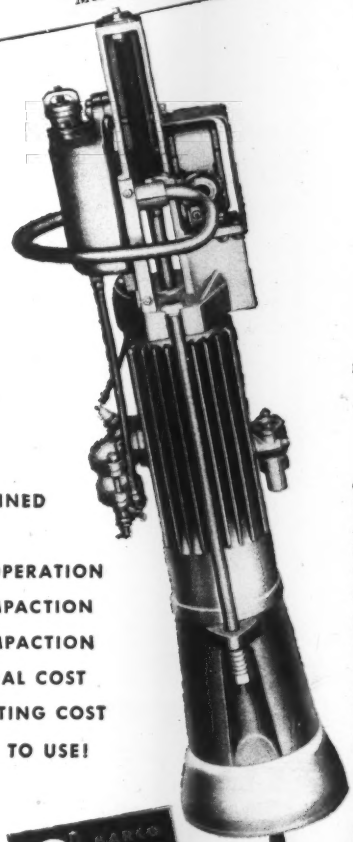

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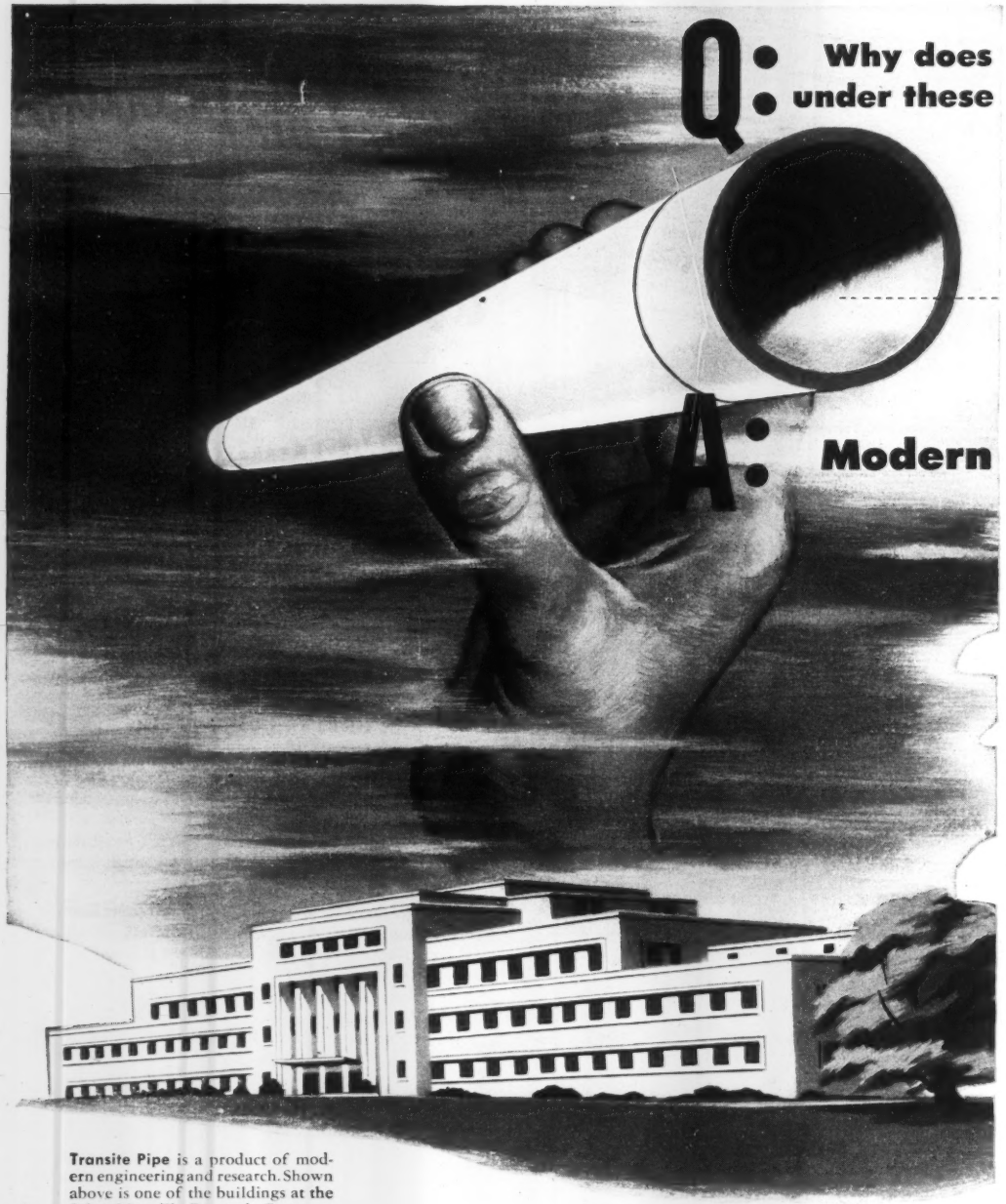

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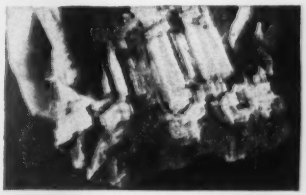
The reason? *Lasting strength!*

Not only does Transite Pipe have the *initial* strength that's needed in a pipe intended for use under busy city streets. Equally important, it has the *lasting* strength that enables it to survive continued corrosive attack, year after year . . . to keep on giving the same dependable, economical service to the community as the day it was installed.

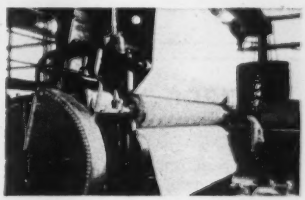
This highly important quality of lasting strength is one of many notable inherent advantages of a pipe engineered with modern water transportation requirements in mind. Transite's Simplex Couplings reduce leakage losses to a minimum, provide flexibility to help relieve the line of soil stresses and traffic loads. Its light weight makes for easier handling and effects substantial savings during installation. Its smooth interior assures a high coefficient of flow (C=140) and, because Transite can never tuberculate, helps keep pumping costs low through the years.

Why not get all the details . . . find out how this modern-engineered-for-the-job asbestos-cement pipe can help solve your water-line problems and *save you money?* For full information, write Johns-Manville, Box 60, New York 16, N. Y.

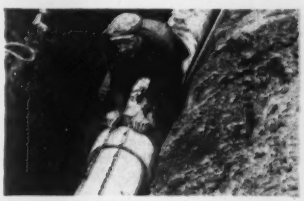
JOHNS-MANVILLE JM PRODUCTS



Tough, strong asbestos fibers reinforce Transite Pipe—contribute to its high corrosion resistance and lasting strength.



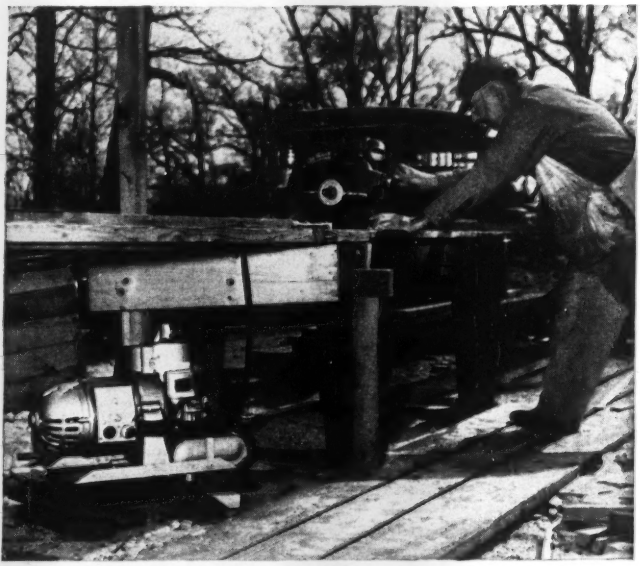
On machines like this, the asbestos-cement-silica mixture is "built up" under heavy pressure into a dense, homogeneous pipe structure.



Transite's flexible Simplex Couplings help relieve the line of excessive flexural stresses—an added safeguard against pipe failures.

asbestos-cement PRESSURE PIPE

Get Greater Efficiency from Power Tools

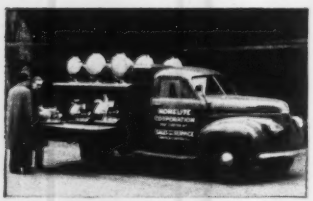


...with **HOMELITE**

Carryable Generators

There's no doubt about it, long electric cables eat up valuable power . . . which is bad for you and bad for your tools. This loss of power results in loss of tool efficiency . . . loss in production per hour. It puts a strain on the tool's motor; causes quicker dulling of a tool's cutting edge. It results in more down-time for costly repairs to tools.

You can eliminate this expensive waste by operating your tools with a Homelite Carryable Generator. Without delay, without trouble you can set your Homelite right where your tools are operating. No long cables will be necessary. You will get the power you need to run your cost-cutting electric tools at peak efficiency, at all times. Write for free demonstration.



Homelite Field Service Keeps your Homelites on the go

At all times Homelite Factory Branch Organizations are ready and equipped to give you fast and efficient service on Homelite Generators, Pumps, Blowers or Chain Saws. Another Homelite plus.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE
CORPORATION

407 RIVERDALE AVENUE • PORT CHESTER, N. Y.

ENGINEERS WANTED

STRUCTURAL ENGINEER

Graduate Engineer, 10 years experience, design of heavy structures with emphasis on long span bridges.

MACHINE DESIGNER

Graduate Engineer, 3 to 5 years experience, design of heavy machinery, as applied to movable bridges.

DESIGN DRAFTSMEN

3 to 5 years experience on heavy structures. Experience on long span bridges, desirable.

SANITARY ENGINEER

Graduate Engineer, 3 to 5 years experience, design and layout of sewage collection and water distribution systems. Design of small to medium sized sewage treatment and water purification works.

TRAFFIC STUDY ENGINEER

Graduate Engineer, 5 to 10 years experience in traffic engineering, including origin and destination surveys and analyses.

SOILS MECHANICS ENGINEER

Graduate Engineer. 5 years experience in consolidation, triaxial shear, and other soils tests, settlement and slope stability analyses and supervision of soils laboratory.

SPECIFICATION WRITER

Graduate Engineer. Responsible experience in writing specifications for heavy civil engineering work. Must have ability to correlate specifications for incidental architectural, mechanical and electrical phases of work into completed specification.

PROJECT PLANNING ENGINEER

Graduate Civil Engineer. Broad, diversified experience in planning, design, construction, cost estimates, and comprehensive analyses of problems of construction to be used in connection with sales of engineering services.

CHIEF OF PARTY

Graduate Engineer. Responsible experience in supervision of First Order Geodetic Triangulation, Precise Levels and Lambert and Transverse Mercator coordinates.

OBSERVERS

Experienced in use of theodolite for geodetic surveying.

COMPUTERS

Experienced in computing First Order Triangulation and Lambert and Transverse Mercator coordinates.

LIBERAL SALARIES

commensurate with experience and ability. Vacations with pay and other benefits.

SUBMIT COMPLETE RESUME

of education and experience, salary requirement, references, and availability date with first letter.

PALMER AND BAKER, INC.

P. O. Box 346

Mobile Alabama

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: **"OPPORTUNITIES"** :EQUIPMENT
BUSINESS: :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.
POSITION WANTED and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
NEW ADVERTISEMENTS: Address N. Y. office, 330 W. 42nd St., N. Y. 36, N. Y., for July 31st issue, closing July 21st.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $17.10 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col. — 3 col.—30 inches to a page. E.N.R.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ASSISTANT CHIEF Engineer for structural steel fabrication plant. Must have come up through the drawing room. This is an exceptional opportunity for an individual with engineering and sales ability. Vacation, group insurance and bonus. Company has a good reputation with over fifty years activity as a fabricator. P-4705, Engineering News-Record.

CIVIL ENGINEERS—2 men, age 25-35, some construction experience. Background in soil mechanics and ground water preferable but not necessary. Opportunity with long-established, leading firm in interesting phase of foundation construction. Salary commensurate ability. Must be willing to travel. Location: 1 man Midwest, 1 Southwest. Replies held in confidence. P-4784, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT for large Middle West General Contractor. Must be able to take complete site management of institutional, industrial and commercial building of any size. Permanent connection. Please send full details of education, experience, age and other pertinent information, care of P-4741, Engineering News-Record.

DIRECTOR OF Public Works for Chartered California City of 8,700. Registered Civil Engineer, California. Full Details and Salary first letter. 40 hour men do not apply. P-4621, Engineering News-Record.

BRIDGE DESIGNERS. Experienced and inexperienced men with a civil engineering degree wanted for a period of about 24 months in the office of a well known organization in Central Pennsylvania. State qualifications, age, salary requirements and availability in first letter. P-4655, Engineering News-Record.

DESIGNERS WANTED—Experienced in highway bridge design. Edwards, Kelcey and Beck, 3 William St., Newark, N. J. Market 3-1804.

ENGINEER-ESTIMATOR — Experienced for southern Connecticut construction firm engaged in building construction. Submit qualifications, experience, salary, references, etc., for appointment. P-4725, Engineering News-Record.

EXPERIENCED SAFETY Engineer, permanent position with national contracting company to install, maintain and supervise safety and accident prevention program on large size heavy construction projects and building construction throughout Eastern United States. Apply immediately by letter, giving full and complete data regarding personal qualifications, experience, references and salary desired. Excellent opportunity. P-4766, Engineering News-Record.

GRADUATE ELECTRICAL Engineer, young, with little or no experience, for training and work on movable bridges. Electrical survey of existing equipment. Interlocking Circuit Design, maintenance of Equipment. State of Illinois, Division of Waterways, 201 W. Monroe Street, Springfield, Illinois.

EXPERIENCED STRUCTURAL Engineer familiar with modern highway bridge design to take charge of such work in established Consulting Engineer's office in North Atlantic area. Permanent position with individual freedom leading to associateship to right man. Address P-4793, Engineering News-Record.

GRADUATE ENGINEERS

Civil,
Electronic
Electrical
Instrument
Mechanical

SAFETY ENGINEER

With degree in electrical engineering and at least five years safety experience. Forward Complete Resume to:

CARBIDE AND CARBON CHEMICALS COMPANY
A Division of
UNION CARBIDE AND CARBON CORPORATION
Att. Personnel Department
Post Office Box 748 Paducah, Kentucky

VACANT POSITION

C. A. LA ELECTRICIDAD DE CARACAS, supplying electric light and power service to the city of Caracas, capital of the Venezuelan Republic, is interested in obtaining the following technical services:

a) CONSULTING ENGINEER: For Electrical Distribution Department. Experience in public utility companies for cities of more than 500,000 inhabitants is required as well as excellent recommendations.

Approximate salary: $14,000.00 a year.

b) ELECTRICAL ENGINEER: With experience in projects and estimates for distribution system.

Approximate salary: $10,000.00 a year.

Please address inquiries to Dr. Ricardo Zuloaga, C.A. La Electricidad de Caracas, Marron a Pelota No. 8, Caracas, Venezuela.

WANTED
CONSTRUCTION SUPERINTENDENT
Experienced in Heavy and Industrial Building Construction
Location: Tidewater Virginia
Reply—Post Office Box 472
Hampton, Virginia

CONSTRUCTION ENGINEERS FOR IMPORTANT OVERSEAS WORK

Civil, Mechanical and Electrical Engineers
Survey Chiefs, Instrument Men, Rod Men
Civil, Mechanical and Electrical Inspectors

Interesting Work—High Pay

METCALF & EDDY
334 BOYLSTON STREET
BOSTON, MASS.

EARTH AUGER SALESMAN

Demonstrate and sell the well-known PENGO Earth Auger, and related products to utilities, telephone companies, contractors, state and federal government agencies. Eastern, Mid-West and Southern territories available on salary plus commission basis. We know of nothing as easy to sell—you merely let the prospective customer bore a few holes with his machine, using our auger. It sells itself. Good job for high quality man. Send full qualifications direct to Nels Nelson.

PETERSEN ENGINEERING CO.
SANTA CLARA CALIFORNIA

SANITARY ENGINEERS

California offers positions with opportunity for professional advancement. Two years experience related to treatment and disposal of sewage and industrial waste, plus college engineering degree. Salary $395 to $481. Write today.

DEPT. PH-2, RECRUITMENT SECTION
STATE PERSONNEL BOARD,
1015 L St., Sacramento, Calif.

WANTED

WANTED TO BUY

5—D8 Caterpillar Tractors
3—D8 Caterpillar Bulldozers
2—D7 Caterpillar Bulldozers
5—DW 10 Caterpillar Tractors & Scrapers
5—DW 20 Caterpillar Tractors & Scrapers
2—Caterpillar Auto Patrols, Model 12
2—¾ yd. Northwest Shovels
5—Euclid end dumps
5—Tournapulls
1—Complete modern paving outfit, including 34 E Paver, Spreader, Finishing Machine and Longitudinal Float both 12' & 24', Cement Bin and Batch Bin.

Equipment must be approximately two years old or less. Will consider equipment of other makes than specified.

W-4780, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED TO BUY
1 Used 35'
BOOM AND FAIRLEADS
for Model 25 N. W. Machine,
Williams Construction Company
Middle River, Maryland, Phone: Essex 1310

WANTED
25 TON TRUCK CRANE
1½ DIESEL CRAWLER CRANE

W-4623, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT

HIGHWAY ENGINEER — To supervise Expressway road design. Having following qualifications: experience in road, culvert, bridge layout and drainage; preparation of highway plans, final estimates, development design and layout. Furnish full information regarding education, experience, age, references and salary required. Replies confidential. Associated Consulting Engineers, 1606 Kelly Ave., Baltimore 9, Maryland.

STRUCTURAL STEEL detailers and checkers. Permanent jobs for experienced men. All types of structures. Air-conditioned office. Bonus, group hospital and life insurance, vacations. Good working conditions. Write St. Joseph Structural Steel Company, Box 68, Station A, St. Joseph, Missouri.

TWO GRADUATE Engineers with five to ten years experience in structural engineering. Must be capable of assuming responsibility in concrete and structural steel design. Write giving brief resume educational and experienced background. State of Illinois, Division of Waterways, 201 W. Monroe Street, Springfield, Illinois.

WANTED EXECUTIVE Construction Engineer with exceptional experience in estimating Heavy Construction Work and with good business contacts. Give resume of experience and contacts. P-4635, Engineering News-Record.

WANTED: EXPERIENCED Bridge Designers. Seelye Stevenson Value & Knecht, 101 Park Avenue, New York 17, N. Y. Telephone Murray Hill 4-2500.

WANTED: INSTRUCTOR of engineering drawing and descriptive geometry. Salary $4,000 for 9 months. Assistant professorship for qualified applicant. M.E. graduate preferred. Dept. of Eng. Drwg., University of North Dakota, Grand Forks, N. Dak.

ARCHITECTURAL SPECIFICATION Writer, assistant. Experienced in commercial and industrial building construction specifications preferred, but will consider architectural or civil graduate with writing experience provided he can write clearly. Long-term employment and good salary, commensurate with ability. Send resume of education, experience, salary desired, date available. Harley, Ellington & Day, Inc., 153 E. Elizabeth St., Detroit 1, Mich.

WANTED STRUCTURAL engineer for promotional and educational work with architects and engineers in West Virginia and Southeastern Ohio. Car furnished. Give education, engineering experience and salary requirements. Prefer age 25-45. P-2721, Engineering News-Record.

EMPLOYMENT SERVICE

SALARIED PERSONNEL $3,000-$25,000. This confidential service, established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Ira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

AVAILABLE: EXECUTIVE Hydraulic Dredging and Heavy Earthwork Construction. Civil Engineering degree, 19 years experience throughout the Southern States. Excellent references. PW-4734, Engineering News-Record.

CIVIL ENGINEER, graduate, licensed, age 36, married, 6 years professional experience in Civil and Sanitary Field. Duties include charge of field parties, design, specifications, reports, resident engineer, meeting with clients and public officials; supervision of draftsmen, engineer aids and junior engineers. PW-4696, Engineering News-Record.

ASST. PURCHASING Agent Famous Construction Co. in NYC desires new connection. NYC or Suburban Jersey. Graduate M.E. seven years construction purchasing experience. 28, Veteran. PW-4492, Engineering News-Record.

CONSTRUCTION ADMINISTRATION — 11 years responsible experience including heavy mechanical and process plants. Background in both owner and constructor, organizations. Age 34, married, presently employed as Senior Engineer, major corporation. Desire relocation to South Texas. PW-4717, Engineering News-Record.

CIVIL ENGINEER—experienced in highway and railroad construction, heavy excavation and coal stripping. Age 46. Capable taking complete engineering charge of project. Available soon. PW-4791, Engineering News-Record.

POSITIONS WANTED

CIVIL ENGINEER, 28, Vet., 3 yrs. experience, desires position field and/or office,. Metropolitan Area preferred. Resume furnished. PW-4686, Engineering News-Record.

CIVIL ENGINEER—Grad. — registered P.E. 5½ yrs. exp. Design all types of building & hydraulic structures & constr. of bldgs., desires responsible position with future. PW-4631, Engineering News-Record.

CONSTRUCTION ENGINEER—3 years supervisory experience in field and in office. Seeks position in Mid-West with firm offering opportunities. PW-4747, Engineering News-Record.

CONSTRUCTION EXECUTIVE Graduate C.E. Reg. Prof. Engr. Active management General contracting; Multiple housing, hospitals, public wks., industrial construction. Complete knowledge field work, estimating, purchasing, sub-contracts, labor. Also experienced Business management engineer; reorganization, financial planning, profit controls. Western U. S. Only. PW-4752, Engineering News-Record.

CONSTRUCTION MAN—30 years experience with heavy equipment, as operator, Master Mechanic, Superintendent of equipment, general foreman and asst. super. Sober, reliable. PW-4709, Engineering News-Record.

CONSTRUCTION MANAGER or Projects Manager available August 1st. Over 25 years diversified experience as construction Manager, Projects Manager and General Superintendent on foreign and domestic work. Outstanding record on reorganizations of delayed projects and in over-all management, supervising all departments. Highest references. PW-4653, Engineering News-Record.

DESIGN, DRAFTING, and Estimating work wanted from General Engineering Consultants and Engineering Construction Contractors in Highway, Sanitary Sewerage, Drainage, Waterworks, and Land Subdivision Projects. PW-4718, Engineering News-Record.

OFFICE MANAGER Account, Auditor 18 yrs. diversified experience in heavy industrial, refinery and housing construction. All phases of financial and cost accounting, payroll, timekeeping. PW-4785, Engineering News-Record.

MASTER MECHANIC, equipment superintendent or mechanical supervisor, age 44, twenty years thorough experience in heavy earth moving, bridge and industrial Projects, experienced in all phases of shop management, capable organizer and producer, location immaterial. PW-4587, Engineering News-Record.

POSITION WANTED. Construction superintendent and engineer, all types buildings and heavy work, industrial, commercial and architectural, chemical and refinery plants, bridges, clean record. Knows costs and capable organizer, completing large concrete job, available soon. PW-4773, Engineering News-Record.

QUARRY SUPT.—Production mgr. seeks difficult quarry situation of production problem involving drilling and blasting techniques or of modernizing quarry practice. Fifteen years in trap, dolomite, granite, hard and soft limestone—producing derrick stone, rip rap concrete and asphaltic aggregate, agstone, finely pulverized for industrial markets; flux stone for the steel industry. Forty-eight yrs. Married, excellent commercial quarry references. What price production. PW-4775, Engineering News-Record.

REGISTERED ENGINEER, 36, extensive experience water and sewerage treatment plant design. Can assume complete charge all phases design projects. Desire responsible position, with commensurate earnings. PW-4693, Engineering News-Record.

SUPERINTENDENT — 25 YEARS experience Construction — Operation — Maintenance — Water Works — Sewerage — Rock Products — Lime — Cement Plants — Open Pit — Tunnel Mining — Handle all types heavy earth moving equipment. Prefer South—Available soon. PW-4792, Engineering News-Record.

SUPERINTENDENT, ROADS, Airports, heavy equipment, twenty years construction experience, fourteen on foreign work, worldwide. Prefer foreign assignment. PW-4727, Engineering News-Record.

SELLING OPPORTUNITIES WANTED

MANUFACTURER'S AGENT — West Coast. Engineer handling sale of technical materials and equipment. Desires additional accounts. RA-4702, Engineering News-Record.

SALES ENGINEER—Civil Engineer, 30 excellent record and background, at present in charge of sales and engineering depts. for small building material mfg., organized and developed sales and advertising program, desires sales position offering greater earning possibilities. SA-4768, Engineering News-Record.

SUPERINTENDENTS AND PROJECT MANAGERS TRAINING COURSE

All instruction by mail. Send today for sample lesson and complete details

GEO. E. DEATHERAGE & SON
5 E. Preston St. Baltimore 2, Maryland

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-first year. Write today.*

WILSON *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

FOR SALE

7 EUCLIDS

15 Ton-Rear Dump Trucks—Model 49FD

Excellent Condition

FRANK M. JUDGE & CO., Inc.
7010 Empire State Bldg.
New York City

AN AUCTION

CONSTRUCTION EQUIPMENT

HOUSTON, TEXAS

MONDAY, AUGUST 4, 10 A.M.

At the Fulton Construction Co. yards, 2600 West Lamar, Houston, Texas; a complete dispersion sale of all equipment; Koehring 605 crane-dragline, 50 to 75' boom, rated 1½ yd shovel, 2 yd drag, D13000 Cat diesel, excellent condition; Koehring 601 crane-drag-shovel, 1½ yd, Cat diesel power, good condition; Koehring 251 crane-drag-shovel, ¾ yd, Wisconsin gas engine, good condition; clamshell and drag buckets; TD-9 tractor w/hyd angle dozer; large hoists; pile driving equipment; 2 Fairbanks-Morse 150 hp diesel marine engines; pumps; pneumatic equipment and tools; welders and generators; Mack model EH winch truck, complete; 2 Mack dump trucks, 3 yd; self-loading float trailer; other trucks; quantities of miscellaneous equipment, tools and supplies; office and engineering equipment; write for complete sale bill; everything positively sells to highest bidders!!!

Helen H. Fulton, *Executrix*
George Fulton Estate, *Owner*

FORKE BROTHERS
the Auctioneers
321 Sharp Bldg. **Lincoln, Nebraska** Phone 2-7045

— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

FOR SALE

1—1946 UNIT ½ YD. SHOVEL
With backhoe attachment
Call **MERIDEN, Conn.**
5-0438

STATIONARY COMPRESSOR

Sullivan WN-3 950 CFM with 185 HP GE Synchronous Motor, 2200 Volts
Excellent Condition $3000.00 F.O.B.
Synchronous Motor, 2200 Volts
Fort Gibson, Okla.

W. R. GRIMSHAW CO.
208 K-O-M-E Bldg. Tulsa 3, Okla.

We're BUYING . . . on our own account for our overseas supply operations.

We have a continuing interest in the availability of all kinds and models of heavy earthmoving equipment due to the fact that our supply requirements change constantly. Currently we are in the market for CATERPILLAR D8's, B-E 15 B diesel shovels, BUCKEYE 70's. Please send *complete* data on your offerings—include wholesale prices and whether condition represented may be certified by reliable inspection agencies.

We're SELLING. . . . 15—LETOURNEAU LS CARRYALLS
14—LETOURNEAU LP CARRYALLS

Priced from $3100 up, depending on tires which average from 60% to 85%. Located in New York City.

5—OSGOOD, model 200 shovels
6—NORTHWEST 80D, drags & shovels
1—NORTHWEST 6, combination
1—NORTHWEST 25, combination

This equipment has been reconditioned in our overseas shops and will arrive in New York about mid-July. It will be priced to sell—will consider sales subject your inspection upon arrival.

CISCO Contractors International Supply Corporation
60 East 42nd Street MUrray Hill 2-6986 New York 17, N. Y.

FOR SALE
LORAIN CRANE—2 YARD

MODEL L-820, SERIAL #11805, 90 ft. BOOM New Cummins Diesel Engine—Complete With Fair Leads

GENERAL SAND & STONE CORP.
ELMWOOD 10, CONN.

FOR SALE

1—D4 Caterpillar Tractor, Serial 7J2404, equipped with LaPlante angle dozer. Condition very good. Price $4500.
1—108 Bucyrus-Erie Shovel, Serial 18589, with three attachments: shovel front, crane boom, and backhoe. Price $8750.
1—Hyster Karry Krane on pneumatic tires. Price $3800.

SEARS & BAVERS
4th & Spring Garden Streets, Easton, Pa.

NORTHWEST MODEL 25 DIESEL - 1947
Serial Number 10657

$10,500 Shovel, Hoe, or Dragline
$11,900 for all attachments

W. D. PHARMER
Pittsfield, Mass. Dial 2-4642

FOR SALE

BUCKEYE TRENCHER

C-20—Special Boom—digs 27' deep by 52" wide. 6 cyl. twin city gas motor. Fair condition—price $4500.

MRS A. ROBBINS 11745 LONGVIEW
DETROIT 5, MICH. LAKEVIEW 6-9837

FOR SALE OR RENT:

One (1) 45 ton Lorain Truck Crane
500 lineal ft. narrow gauge rail
6 c-35 drafters

BUCKS COUNTY CONSTRUCTION CO.
Monroe Street Penndel, Penna.
Phone: Langhorne 3795

FOR QUICK SALE

LIMA CRANE—Gas Powered—50 foot boom Model No. 101—Serial No. 109
Located: Bradford, Pennsylvania
Asking: $5,000. Make Offer

FS-4757, Engineering News-Record
330 West 42nd St., New York 36, N. Y.

MOTORS, GENERATORS, TRANSFORMERS

1 — 1500 H.P.
Bought and Sold
New and Rebuilt

ELECTRIC EQUIPMENT CO.
ROCHESTER 1, N. Y.

FOR SALE

2—LaPlant Choate Model TS-300 Motor Scrapers. Rebuilt and Ready For Service. Priced to Sell. Can Be Seen At

STEPHENS-JONES, INC.
DES MOINES, IOWA

FROM THIS GATE COMES THE WORLD'S BEST REBUILT CONSTRUCTION EQUIPMENT!

When L. B. Smith rebuilds your construction equipment, you get the finest rebuilding job possible. 150,000 square feet of working space, filled with the most modern equipment, manned by men who are experts in their profession. Rebuilding *is* a profession, one requiring the utmost in skilled knowledge. This knowledge, and this equipment, is at your disposal.

DO YOU HAVE A REBUILDING PROBLEM?
WE INVITE YOU TO CONTACT US TODAY.

L. B. SMITH INC.

CAMP HILL, SUBURB OF HARRISBURG, PA.

L. B. SMITH INC.

New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 1 NO. 4

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

4024 Cedarapids roll, rebuilt.
3018 Cedarapids roll, rebuilt.
36" x 14' apron feeder, rebuilt.
Cedarapids Rock-It plant with 2025 jaw, 3033 mill. New.
Cedarapids 1236 Model 6C plant, new.
4033 Cedarapids Hammermill, rebuilt.
1030 Good Roads. Reconditioned.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 6' Kennedy Van Saun single deck.
3' x 6' Kennedy Van Saun triple deck.
15 cu. yd. Cedarapids sand drag, new.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
100-ton, 2-compartment, 13'x23' storage bin with clamshell gates.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.

TRUCKS—TRAILERS

1½-ton Ford with any body.
2½-ton GMC, rebuilt.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current gasoline and diesel powered.

SHOVELS—CRANES

Lorain L-50, 1-yd. diesel. New condition.
Brownhoist 1-yd. gas shovel & crane.
Link-Belt LS50 gas ½-yd. shovel & hoe.
Link-Belt LS85 gas ¾ yard shovel.
P&H Model 150, ½-yd. crane.

SHOVEL & CRANE ATTACHMENTS

Lorain TL-20 shovel attachment.
Lorain L-41 Chain Crowd Shovel Attachment. Rebuilt.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
McCaffrey Model 648 for 1¼ to 2-yd. crane.
McCaffrey Model 636 for ¾-yd. to 1-yd. crane.

Backhoe Buckets & Attachments

Lorain TL-25 hoe attachment, new.
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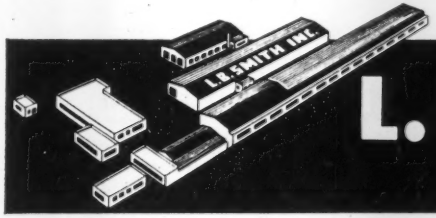

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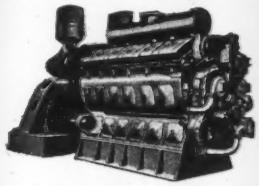

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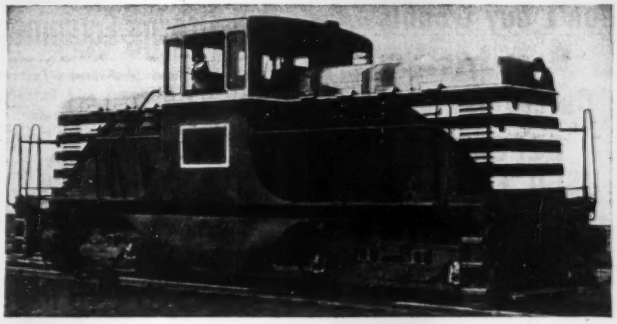

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Contact us for serials, conditions and prices. All Machines located St. Louis.

OFFICIAL PROPOSALS

Bids: July 24, 1952

N. Y. State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on Thursday, July 24, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York				
Greene	FARC 52-71	Tannersville-Haines Falls, S. H. 1630 Project F-1104(1)	3.37	Asp. Conc. Ty. 1A, Opt. Reinf. Conc. Slab, Br. 24'	$10,000 Plans $10	$180,000
Schenectady	FARC 52-75	Scotia-Saratoga County Line, Pt. 2 S. H. 1609, Project S-758(2)	4.14	Asp. Conc. Ty. 1A, Opt.	$8,000 Plans $10	$142,000
		DISTRICT No. 3				
		Wm. Robinson, District Engineer, 301 East Water Street, Syracuse, New York				
Tompkins	FASS 52-10	Peruville Relocation C. R. 107 Project S-283(1)	1.85	Bit. Mac. Opt. Rd. Mix	$7,000 Plans $10	$130,000
		DISTRICT No. 4				
		J. P. Larsen, District Engineer, Barge Canal Terminal, Rochester, New York				
Ontario	FAC 52-8P FAC 52-9 FAGC 52-10	Geneva City: Lake Front Arterial Pt. 1 & Pt. 1A U & UG-452(6)	0.98	9" Cem. Conc. Pavt. 48'-58' Wide = 0.85 Mi. Asp. Conc. Ty. 1A, Opt. = 0.11 Mi. Misc. Work = 0.02 Mi. R.R. Sep. 5 Sp. Alpha I-Beam 326.08' Hy. Sep. Rigid Frame Arch 70'	$60,000 Plans $25	$1,103,000
		DISTRICT No. 5				
		C. R. Waters, District Engineer, 65 Court Street, Buffalo, New York				
Erie	FAC 52-7	City of Buffalo: Humboldt Parkway Extension (Agassiz Circle to Delaware Ave.) Project U-1057(2)	1.66	Asp. Conc. Ty. 2A = 0.92 Mi. (Pkwy.) Asp. Conc. Ty. 2A = 0.67 Mi. (Acc.) Misc. Work = 0.07 Mi. (Pkwy.)	$40,000 Plans $15	$721,000
Erie	FARC 52-72	Alden Village, S. H. 1065 Alden-Town Line, S. H. 644 Project F-652(6)	1.95	Asp. Conc. Ty. 1A, Opt. = 1.92 Mi Misc. Work = 0.03 Mi.	$9,000 Plans $10	$159,000
		DISTRICT No. 7				
		C. C. Cassel, District Engineer, 444 Van Duzee St., Watertown, New York				
Jefferson	FAC 52-4 FAGC 52-5	City of Watertown: Arsenal St. U & UG-577(4)	1.55	Asp. Conc. Ty. 2A R.R. Sep. 4 Sp. Alpha I-Beam 276'	$70,000 Plans $50	$1,269,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York				
Putnam, Dutchess & Westchester	TSP 52-1R	Taconic State Parkway Incl. Bear Mt. Pkwy. Spur	5.67	Asp. Conc. Ty. 1A, Opt.	$8,000 Plans $10	$145,000
Putnam	FARC 52-71	Croton Falls-Brewster, Pt. 2 S. H. 5458 Brewster Village, S. H. 5098 Project F-341(3); F-643(13)	1.81	Asp. Conc. Ty. 1A, Opt.	$4,000 Plans $10	$75,000
		DISTRICT No. 9				
		F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, New York				
Broome	FASH 52-9	Johnson City-Route 17 Connection FASH 50-13 Johnson City Bridge Project Contract No. 3) Proj. U-1092(2)	0.37	Superstructure for 8 Span Alpha Plate Girder 1,069' Alpha I-Beam 43.81' Span 2 Span Alpha I-Beam 100'	$86,000 Plans $15	$1,587,135
		DISTRICT No. 10				
		J. J. Ducey, District Engineer, Little E. Neck Rd. & Montauk Hwy., Babylon, Long Island, New York				
Kings	FABQE 52-1	Brooklyn-Queens Expressway (Cont. 16) Project U-1066(9)	0.80	Demolition of Bldgs.	$30,000 Plans $10	$510,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 750-C-259 for furnishing labor and materials and performing all work for earthwork and asphaltic membrane lining, lateral 256, station 783+40 to station 857+17.7, Kendrick Project, Wyoming, will be mailed to P. O. Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time, July 24, 1952, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming. Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: Avery A. Batson, Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and L. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. The specifications will consist of 2 volumes, "Special Provisions" and "Standard Specifications for Construction of Canal Systems, August 1951." No charge will be made for copies of the Standard Specifications or for copies of the Special Provisions furnished for bidding purposes; for all others the charge will be $0.30 per copy for the Standard Specifications and $0.60 per copy for the Special Provisions, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

Bids: July 22, 1952

Construction of Concrete Cylinder Pipe Transmission Main and Appurtenances

CITY OF BETHLEHEM,
PENNSYLVANIA
Contract No. 1

Sealed proposals, addressed to the City Council of Bethlehem, Pennsylvania, for construction of 36-inch Reinforced Concrete Cylinder Transmission Main and Appurtenances, will be received at the office of the City Clerk, 53 East Broad Street, Bethlehem, Pennsylvania, until 9:30 A.M. Eastern Daylight Saving Time, (8:30 A.M., Eastern Standard Time) on July 22, 1952, and will be publicly opened and read aloud at a meeting of the City Council in the Council Chambers, City Hall, immediately thereafter.

The work under this contract will consist of the construction of a 36-inch concrete cylinder pipe transmission main approximately 41,600 feet in length, including all appurtenant work and facilities from an existing 24-inch reinforced concrete main at the intersection of Dewberry and Madison Avenues in the City of Bethlehem to a connection with the existing 30-inch reinforced concrete water transmission main where it crosses State Highway Route 329 near Howertown, Northampton County, Pennsylvania.

Plans and specifications, Form of Contract and Bidding Blanks are on file and open to public inspection at the office of the Bureau of Water, 29 East Broad Street, Bethlehem, Pennsylvania, or at the office of Morris Knowles Incorporated, Engineers, 1312 Park Building, Pittsburgh, Pennsylvania. The plans and specifications may be obtained at either of said offices for use in preparing a bid, upon deposit of Twenty-five Dollars ($25.00) for each set. If the plans and specifications are returned in good condition within a period of two weeks after the date set for the open of bids, the full amount of the deposit will be returned to each bidder. If the plans and specifications are not returned within the time stated, the entire amount of the deposit will be forfeited.

No bid may be withdrawn during a period of thirty (30) days after the scheduled closing time for receipt of bids.

The right to waive any informality in any bid; to accept any bid; or to reject any or all bids, is reserved by the Council of Bethlehem, Pennsylvania.

Each proposal shall be accompanied by a certified check, bank treasurer's check, or cashier's check, in an amount not less than five per cent (5%) of the total of the bid submitted, in the form and subject to the conditions provided in the Information for Bidders. The bidder to whom a Contract is awarded will be required to furnish, for the faithful performance of the work thereunder, an approved Surety Company Performance Bond in an amount equal to 100 per cent (100%) of the total of the bid submitted, and a separate approved Surety Company Labor and Materialmen's Bond in an amount equal to 50 per cent (50%) of the total of the bid submitted.

CITY OF BETHLEHEM,
PENNSYLVANIA
Bertram L. Nagle, City Clerk
MORRIS KNOWLES
INCORPORATED
Engineers

Bids: July 22, 1952

Traveling Cranes

CONTRACT 410

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, July 22, 1952, for Contract 410, for furnishing, testing and delivering 15-ton and 3-ton electric traveling cranes and appurtenances for installation in the Neversink and East Delaware intake chambers and the Downsville release water chamber of the Delaware system, all as set forth in the specifications.

No bid will be received and deposited un-

(Continued on next page)

OFFICIAL PROPOSALS

less accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of fifteen thousand dollars ($15,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: July 24, 1952

Soil Explorations on Foundations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Daylight Saving Time, on July 24, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, CATSKILL SECTION, SUBDIVISION 6, HARRIMAN TO NEWBURGH, ORANGE COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-37A

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $44,300.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2215.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

Official Proposals Columns of
ENGINEERING NEWS-RECORD
are MUST reading, each week, for contractors, engineering-construction companies, equipment and materials manufacturers, all over the United States. . . . and used regularly for over 50 years by government, state, county and municipal departments for advertising bids.
Official Proposal Division
ENGINEERING NEWS-RECORD
New York City

OFFICIAL PROPOSALS

Bids: July 31, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on Thursday, July 31, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, District Engineer, 353 Broadway, Albany, New York				
Warren	DA 52-3	Gore Mountain Access Road Project No. AM-3	3.80	Bit. Mac. D.S.T. Br. Stone	$1,700 Plans $10	$33,179
		DISTRICT No. 2				
		LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, New York				
Fulton	FARC 52-59	Meco-Caroga Lake, S. H. 618 Project No. S-700(2)	5.40	Asp. Conc. Ty. 1A Optional	$14,000 Plans $10	$242,000
		DISTRICT No. 5				
		C. R. WATERS, District Engineer, 65 Court St., Buffalo, New York				
Cattaraugus	FARC 52-49	Arcade-Farmersville Pt. 2, S. H. 8115 Project No. F-180(2)	1.73	Asp. Conc. Ty. 1A Optional = 1.71 Mi. Misc. Work = 0.04 Mi.	$6,000 Plans $10	$100,000
Chautauqua	FASS 52-8	West Oak Hill Road, C. R. 120 Project No. S-294(1)	1.80	Bit. Mac. Ty. 1, Pen. Meth. = 1.79 Mi. Misc. Work = 0.01 Mi.	$5,500 Plans $10	$95,000
		DISTRICT No. 6				
		H. F. BRUMM, District Engineer, State Office Building, Hornell, New York				
Steuben	RC 52-79	Bath-Hammondsport Pt. 1, S. H. 5517	0.80	Storm Sewer	$5,500 Plans $10	$100,000
		DISTRICT No. 7				
		C. C. CASSEL, District Engineer, 444 Van Duzee St., Watertown, New York				
Franklin, Jefferson, Lewis, St. Lawrence	RC 52-80	Br. #1 Tupper Lake-Moddy, S. H. 985-A; Br. #2 Wawbeek-Lake Clear Jct., Pt. 1, S. H. 8135; Br. #2 Watertown-Carthage, Pt. 3, S.H. 428; Br. #4 Lowville-Carthage S. H. 5332-B; Br. #1, Potsdam-Nicholville, P. H. 5285; Br. #1 Dekalb-Heuvelton, S. H. 8113; Br. #1 Brasie Corners-Edwardsville, S.H. 1264		Painting 7 Bridges	$700 Plans $10	$13,000
		DISTRICT No. 8				
		J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, New York				
Westchester	TSP 52-2R	Taconic State Parkway	0.43	Asp. Conc. Ty. 1A, Opt.	$3,300 Plans $10	$60,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

U. S. Government

NOTICE TO CONTRACTORS
U. S. DEPARTMENT OF THE INTERIOR
OFFICE OF TERRITORIES
WASHINGTON 25, D. C.

Sealed bids will be received by the Chief of the Public Works Division, Office of Territories, Department of the Interior, Room 2713, Interior Building, Washington 25, D. C. until 2:00 P.M., 1952, August 28, Daylight Saving time, for the construction of the Christiansted Consolidated School and the alterations to the La Valle Elementary School, St. Croix, Virgin Islands.

At the time and place indicated above the bids will be publicly opened and read aloud. Bids received after the hour set for the bid opening will be returned unopened.

Plans and Specifications and other proposed contract documents are open for public inspection at the office of the District Engineer for the Virgin Islands, Thomas G. Mooney, Charlotte Amalie, St. Thomas, U. S. Virgin Islands; M. A. Dyer Company, 24 School Street, Boston, Massachusetts; Lester M. Marx, Chief, Public Works Division, Room 2713, Interior Building, Washington, D. C.; A. G. C. Office, 1113 Congress Building, Miami, Florida; Builders Exchange, 46 Northeast 6th Street, Miami, Florida; U. S. Department of Commerce, 22, Puerto Rican Reconstruction Administration Grounds, Building N, San Juan, Puerto Rico; F. W. Dodge Corp., 119 West 40th Street, New York 18, N. Y.

A set of such documents may be procured from the office of M. A. Dyer Company (Architect-Engineer) at 24 School Street, Boston, Massachusetts upon deposit of $50.00 by certified check payable to the

U. S. Government

Treasurer of the United States, all of which will be refunded to bona fide bidders upon the return of the plans and specifications in good condition within fifteen (15) days from the date of bid opening. A bona fide bidder includes any person who submits a bid for a general contract, but does not include a person who submits a quotation to the general contract bidders.

To parties who procure plans and specifications upon payment of the above stated amount, and who do not submit a bid, $30.00 will be refunded upon the return thereof in good condition within fifteen (15) days from the date of the bid opening. No refund will be made for return after that time.

Each bid must be accompanied by a satisfactory bid security (certified check or bid bond) in an amount of not less than 5 per cent of the total bid.

The successful bidder will be required to furnish a performance bond and payment bond, each in the amount of 100 per cent of the contract price.

No bid may be withdrawn until thirty (30) days after the scheduled closing time for the receipt of bids.

The Government reserves the right to reject any and all bids and to waive informalities with respect thereto. The Government also reserves the right to award a contract for the various items on the basis of the basic bid or by the adoption of any or all of the deductible alternates, whichever is in the best interests of the United States.

LESTER M. MARX
Chief, Public Works Division
Office of Territories

OFFICIAL PROPOSALS

Bids: July 24, 1952

Haddon Avenue

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of Haddon Avenue from Wright Avenue to Euclid Avenue in the City of Camden, Camden County, Federal Aid Secondary Project No. S-1222(2). Length 1.24 miles. The principal items of construction are:

Estimated:

16,613 cu. yds. Excavation—Unclassified
5,392 cu. yds. Subbase
32,345 sq. yds. 9" Plain Concrete Pavement
12,231 lin. ft. Concrete Curb
9,100 sq. yds. 5" Concrete Sidewalk

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Thursday, July 24, 1952, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 23 of the Revised Statutes of New Jersey and supplements, and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 910 Broadway, Camden, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: August 1, 1952

Notice to Contractors of State Highway Construction

August 1, 1952

Sealed bids will be received by the State of Tennessee Department of Highways and Public Works at their Offices in the Cotton States Building, Nashville, Tennessee, until 10:00 o'clock A.M.

August 1, 1952

HAMILTON COUNTY:

Project No. SAP-979-A—The Construction of a new Vehicular Tunnel and the reconstruction of the existing tunnel through Missionary Ridge at McCallie Avenue in Chattanooga.

Project Length 951 Feet
(Unloading Point—Chattanooga)

No Proposals will be issued after 9:00 O'Clock A.M. Friday Aug. 1, 1952.

THE ATTENTION OF THE BIDDER IS DIRECTED TO CHAPTER 135, ACTS OF 1945.

Contractor must prequalify with the Department of Highways and Public Works in accordance with Chapter 80 of the Public Acts of 1929, before any proposals will be furnished. PROSPECTIVE BIDDERS MUST HAVE FILED THEIR QUESTIONNAIRES FOR QUALIFICATION FIFTEEN (15) DAYS BEFORE THE DATE OF LETTING. QUESTIONNAIRES AND/OR FINANCIAL STATEMENTS MAY BE FILED WITH THE BID.

QUESTIONNAIRES AS OF Jan. 1, 1952 OR LATER, WILL BE REQUIRED OF ALL PROSPECTIVE BIDDERS IN THIS LETTING.

The right to reject any and all bids is reserved.

C. W. BEND, Commissioner

Bids: July 29, 1952

Bloomfield Avenue

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of Bloomfield Avenue from Third Avenue to Chester Avenue in the City of Newark, and Towns of Bloomfield and Belleville, Essex County, Federal Aid Secondary Project No. S-126(3). Length 0.707 miles. The principal items of construction are:

Estimated:

16,991 cu. yds. Excavation—Unclassified
6,986 cu. yds. Subbase
33,075 sq. yds. 8" Conc. Base—H. E. Strength
5,440 tons Bituminous Concrete
4,853 lin. ft. R. C. Pipe
13,281 lin. ft. Granite Curb
7,818 sq. yds. 5" Concrete Sidewalk

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, July 29, 1952, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 23 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 309 Washington Street, Newark, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: July 22, 1952

Contracts No. 4A, 4B, 4

Sealed proposals will be received by the West Virginia Turnpike Commission for:

The work to be done under these Contracts involves the making of subsurface investigations along the route of the West Virginia Turnpike. Contract No. 4A extends from Mile 50 ± near Mossy to Mile 60 ± near Greencastle and the Kanawha-Fayette County line. Contract No. 4B extends from Mile 60 ± to Mile 88 ± at Charleston. Contract 4 combines Contracts 4A and 4B into one contract. All contracts are in connection with the construction of the West Virginia Turnpike in the State of West Virginia.

The principal items of work include:

	Contract 4A	Contract 4B
Type A Borings		
Type B Borings		
Auger Borings		
Core Borings		
Undisturbed Samples		
Unit		
Lin. Ft.	600	1300
Lin. Ft.	50	150
Lin. Ft.	2600	5300
Lin.-Ft.	1800	3100
Each	1	3

The principal items of work for Contract No. 4 equal the sum of the quantities listed for Contracts No. 4A and No. 4B.

Proposals will be received at the office of the West Virginia Turnpike Commission, 1340 Wilson Street, Charleston, West Virginia, until 10:00 A.M. Eastern Standard Time, on July 22, 1952, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen and may be inspected by prospective bidders during office hours after June 11, 1952 at the office of Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, and at the office of the Engineers, Gannett, Fleming, Corddry and Carpenter, 600 North Second Street, Harrisburg, Pennsylvania and at Chesapeake, W. Va.

Contract documents will be furnished for Five Dollars ($5.00) for each set, which is not refundable, upon application to Howard, Needles, Tammen & Bergendoff, 804 Greenbrier Street, Charleston, West Virginia, MAILING ADDRESS P. O. Box 5266, Capitol Station, Charleston, West Virginia. Make Checks payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be made upon the Proposal Forms furnished by the Commission in the manner designated in the Specifications, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a cashier's or certified check drawn to the order of the West Virginia Turnpike Commission, for not less than five (5) percent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above on or before the day and hour named. Where proposals are submitted for more than one contract, each proposal must be accompanied by a cashier's or certified check in the required amount. Copies of the proposal form to be used for submitting proposals, and of the special addressed envelope are furnished in detached form with the contract documents.

The Contracts will be awarded or the proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all proposals, and to waive any or all formalities.

THE WEST VIRGINIA TURNPIKE COMMISSION
D. Holmes Morton,
Chairman

THE FUTURE BUILDS UPON THE PAST. H. C. (Chan) Turner, Jr., president of Turner Construction Co., leads observance of the firm's 50th anniversary, builds his organization for the years ahead. (ENR photos by Compton)

Turner looks to the future

Early this month, the Philadelphia Evening Bulletin disclosed it had awarded a construction contract to build a multi-million dollar newspaper plant in the heart of downtown Philadelphia. It is to be "the most modern newspaper building in the United States," the Bulletin proudly announced. The builder selected for the job was Turner Construction Co.—which this year is celebrating its 50th anniversary.

For Turner it was another win in a long string. Competition for the job had been keen. Turner got the job on proven ability and reputation—a reputation it has established over 50 years. The award of this contract has provided one more boost in the upward trend of Turner's dollar volume.

Through the year 1945, Turner had done a total volume of $677 million since its establishment in 1902. In the six-year, post-war era following 1945, the firm completed $353 million worth of work. Volume in 1951 set a new annual record, passing the $100-million mark.

President H. C. (Chan) Turner, Jr., whose 50th birthday came this year along with the firm's anniversary, is modest about these accomplishments.

"Of course, if you consider the present cost basis compared to the early days, the new business volume does not look quite so large; but anyway, a billion dollars in 50 years represents a lot of work." (If converted to present day costs, it would be worth two billion dollars.)

• **Modern pioneer**—Young Turner has been at the helm of the firm since 1947, during its most recent spurt of development, directing the company to a steady flow of new projects such as the Evening Bulletin Building; the monumental Mellon-U. S. Steel Building nearing completion in Pittsburgh; the Mutual Life Insurance Building and the Chrysler Building East in New York; and the new major appliance center being built by General Electric Co. in Louisville, Ky.

He believes that a long tradition is not an unqualified business asset:

"We've got to be sure we're developing an alert young organization, always on the job and moving along. We can't rest on our laurels. Personnel is the principal asset of our company—capital and equipment are secondary. We stress in a broad way that we are not dependent upon any one or two individuals. We must keep on developing an aggressive organization to meet the construction problems of tomorrow."

That this policy is paying off is now a matter of record. It has been translated into smoother coordination between Turner and suppliers, and subcontractors. It has added to Turner's reputation among other contractors.

When H. C. Turner, Sr., founded the firm in 1902, he began pioneering in concrete construction. In 1904, he successfully built the nine-story Robert Gair Building, Brooklyn. It was the first real test of reinforced concrete; and it led to more business for the company.

In 1915, the company adopted the slogan: "Turner for Concrete," but a few years later began to conclude that it was a liability instead of an asset. Turner Construction Co. had become so well known for its specialty in concrete that it began to have difficulty qualifying with engineers and architects for other types of structures.

Since then Turner has considerably broadened its range in building construction. In line with current trends toward "package" jobs, the firm will now offer complete service on a project when that is what a customer wants. But it will do this by teaming up with engineering firms and architects, most suited for the individual project. Says Mr. Turner: "That's the best way to give a package service. We concentrate on keeping a closely-knit management-supervisory team that can produce the kind of custom-built construction job that gives the owner satisfaction."

• **Public affairs**—Chan Turner has not confined his activities to the internal problems of his company. He has moved to assume the broader role of helping to shape the industry's future under a changing economy. Again and

. . . "We can't rest on our laurels."

again he has gone to bat to speak for the industry on government policies that affect construction. Experience in the field lends authority to what he has to say.

Turner came up through the ranks. After graduating from Swarthmore College in 1923, he went to work in his father's company as a timekeeper, moving up as a field accountant, field engineer, cost engineer, assistant superintendent, superintendent, purchasing agent, and sales engineer.

In January 1938, he became vice-president of the firm in the Philadelphia office, and during his stay there (until 1947) served as president of the local chapter of the Associated General Contractors, and on the board of directors of the Philadelphia Chamber of Commerce.

When he came to New York, his activities multiplied along with his responsibilities. For two years he served as president of the Metropolitan Builders Association, the local chapter of the AGC. Currently he is vice president and director of the New York Building Congress and a national director of the AGC.

His extra-curricular work includes membership on the boards of directors of the Liberty Mutual Insurance Co. of Boston, of the Provident Trust Co. of Philadelphia, and of the Commerce and Industry Association of New York.

He has put this experience to work—serving on the construction industry advisory committees of the National Production Authority and the Office of Price Stabilization. Those agencies have not always been receptive to his ideas; but they have frequently been exposed to them.

Turner City 1951

COMPOSITE PICTURE of work 50% or more completed by Turner Construction Co. as of Dec. 31, 1951, shows projects for the following companies.

(1-2) Springfield Fire and Marine Insurance Co., Springfield, Mass.; (3) United States Rubber Co., sixth story addition on existing building, Chicopee Falls, Mass.; (4) 2933 Sheridan Road Building Corp., Chicago, Ill.; (5) W. P. Chrysler Building Corp., New York City; (6) Beneficial Industrial Loan Corp., Wilmington, Del.; (7) Flamingo Apartments, Inc., Philadelphia, Pa.; (8) Aid Association for Lutherans, Appleton, Wisconsin; (9) Princeton University, Woodrow Wilson Hall, Princeton, N. J.; (10) Waterbury Savings Bank, Waterbury, Conn.; (11) News Syndicate Co., Inc., Brooklyn, N. Y.; (12) Philco Corp., Philadelphia, Pa.; (13-16) Country Club Estates, Inc., Philadelphia, Pa.; (17) Army Corps of Engineers, addition of penthouse and modernization of existing Penn. A. C. Building, Philadelphia, Pa.; (18) Wyeth, Inc., West Chester, Pa.; (19-22) Safeway Stores, Inc., Landover, Md.; (23-27) Safeway Stores, Inc., Kearney, N. J.; (28) American Can Co., St. Paul, Minn.; (29) Pratt & Whitney Aircraft division, East Hartford, Conn.; (30) Hamilton Standard division of United Aircraft Corp., Windsor Locks, Conn.; (31-37) American Car & Foundry Co., Berwick, Pa.; (38) Buick-American Thread, Boston, Mass.; (39) Merchants Refrigerating Co., Hopkins, Minn.; (40) Princeton University alterations to Pyne Administration Building, Princeton, N. J.; (41-50) Ciba States Limited, Toms River, N. J.; (51) Minnesota Mining & Manufacturing Co., Bristol, Pa.; and (52) Electrolux Corp., Old Greenwich, Conn.

• **Senate hearing**—How Chan Turner has tackled industry problems at the national level showed up recently when he appeared before the Senate Judiciary Committee to testify on the proposed bid-shopping bill (ENR June 12, p. 21).

With characteristic directness, he opened his remarks this way:

"The provisions of this bill, which would require general contractors to name their subcontractors for plumbing, heating and electrical work, are not in my opinion, either practical or beneficial to the government, the general contractor, or the better specialty subcontractor."

Turner speaks quietly and clearly. He told the senators how the bill "would result in increased cost to the government and would have the tendency to encourage collusive bidding."

He said the bill would reduce the number of general contractors submitting bids on government projects, and pointed out that the principles proposed in the bill "if carried to the extreme" would reduce general contractors to "purely brokers."

"In such a situation, who would manage, coordinate and expedite the project on an overall basis? Certainly neither the government nor architects or engineers are organized, or in a position to undertake such work."

The senators listened as Turner concluded forcibly with a statement that is typical of his position on many of the problems confronting the industry:

"Many of the complications we have in our economy today have resulted from the pressure of small groups who have asked the federal government to assume some of their duties and responsibilities to protect them from their own shortcomings. The construction industry should solve its own problems."

• **The broad picture**—Chan Turner has seen government controls over the construction industry multiply since he became head of his company.

"NPA has slowed down the volume of building. At one time there was a need for the Controlled Materials Plan, but as the materials situation eases there will no longer be any need for controls.

His opposition to the establishment of "price controls" over the industry is a matter of record. He says the present regulation "hasn't affected prices at all except perhaps in the small specialty contract field. Competition takes care of price control in construction."

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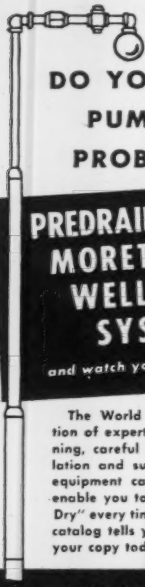

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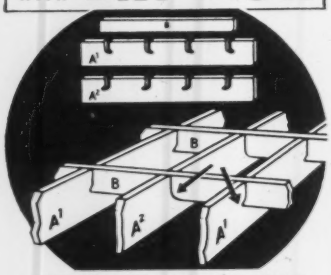

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"There are too many selfish interests . . ."

Wage controls have created more instability than stability, he says. The Construction Industry Stabilization Commission under the Wage Stabilization Board is fine in theory, but it has adopted certain WSB polices that have destroyed its value in practice.

As an outstanding example, he cites the 15-cent hourly wage increase and 7½ cent welfare fund CISC promoted. "Lots of areas had no provisions for welfare funds. They are now being forced to adopt them. In many areas where agreements already were reached, the CISC ruling caused strikes and disorders. I don't call this sort of thing 'stabilization'."

• **Government's role**—Although he is opposed to many controls, Turner is not opposed to all government regulation. He sees that many of the major problems facing the industry come from disorganization within the industry. And he thinks the government may be able to help promote greater unity in the industry.

He finds several indications of how the government can help in the recommendations of the President's Materials Policy Commission (Paley Report) and in the report of the Building Research Advisory Board (BRAB) to the Defense Production Administration.

The Paley Report recommends that the federal government should set up a national building code based on performance requirements not specific materials—and that compliance with its requirements be required on federal and FHA construction (ENR June 27, p. 21). Turner agrees this would be desirable, but doubts if legislation of this type would pass Congress.

"There are too many selfish interests. They have blocked modernization of building codes in many areas, and they are a serious factor in disorganization of the industry," Turner says. He cites resistance to a modernized code which might, for example, decrease the use of plaster as a building material.

On the Paley Report's recommendation to intensify anti-trust activity "to promote a rational, efficient distribution system," Turner points out anti-trust activity should apply to labor as well as to industry. He classes jurisdictional disputes as one of the biggest factors creating disunity within the industry today.

The solution, Turner feels, is to give the Joint Board for Jurisdictional Disputes broader power over individual union autonomy. There should be enough power in the Building Trades Department of the AFL to force settlement.

Turner is particularly encouraged by the work of BRAB and sees great hope in it for the future. As a result of its report, it will be more influential than it has been in the past he predicts. He attaches a lot of importance to the fact that BRAB's research is supported by individuals and by the AGC.

• **Future looks inviting**—Currently many of Turner's big jobs are being delayed by a shortage of steel caused by the steel strike. Work less than 50% complete is facing more serious delay than buildings in the finishing stages. All will feel some effects.

But the long-range outlook is far from bleak for Turner. As he says: "A billion-dollar volume in the first 50 years, a lot of satisfied customers and an able, closely-knit construction organization provide a good base to work from."

"The future looks encouraging . . ."

$12 billion pension funds seen as source for building

An estimated $12 billion—probably the largest single pool of private capital now in existence outside of the life insurance companies—is now in reserve funds of pension funds that have grown up in the United States since the end of World War II.

Yet, contrary to the early beliefs of economists, not half of that huge reserve is being invested directly in construction.

Most of the money—and it is pouring into the pension funds at a rate of more than $2 billion a year, according to an ENGINEERING NEWS-RECORD survey—is going into government and corporate bonds and Class A stocks. As nearly as can be determined, little of it is being invested in public improvement bonds, for instance, less still in direct-construction-supporting devices such as mortgages on industrial construction (excepting for the portion of the funds being handled by insurance companies).

• **Tough digging**—Determining just how much money has gone into pension funds—and what's being done with it—has exasperated financial men for years, and particularly in the period of great growth of the funds since the end of World War II.

The problem centers on two points: The vast number of such plans in existence and the lack of any consistent reporting of them; and the equally vast number of ways in which they are handled.

For instance, slightly more than half the plans are handled by insurance companies. Figures on these are available. But the remaining plans are handled in a variety of ways—the most popular being through trustees, appointed from the group making up the plan, or by local banks or other institutions. And some of the plans are purely company-run, others are jointly company-union, still others union only.

• **The facts**—Checking with the U. S. Bureau of Internal Revenue (where most—but not all—of the plans are registered for tax-exemption purposes), the insurance companies and other sources, here are the best estimates available:

1. There are 17,451 individual pension plans on file at present with the Bureau of Internal Revenue; there are perhaps 1,000 more not registered;

2. These plans (which include both insured and trustee plans) cover an estimated 10 million persons, of whom 6.7 million are in trusteed plans, the rest insured plans;

3. Insured plans now have reserves of about $6.4 billion; trusteed plans about $5.6 billion;

4. Annual payments into trusteed plans are running at around $1.5 billion, into insured plans at the rate of $1 billion.

5. The insurance companies alone handle some 12,200 plans.

• **Where does it go?**—But the question of what's being done with the money is of greatest interest, both to financial men and to the construction industry.

Part of the money—that handled by the insurance companies—has undoubtedly played a significant part in financing new construction ranging from toll roads to new industrial plants, and from private homes to apartment developments.

But it seems obvious that the trusteed funds have been content to invest their money in two places: U. S. government bonds, or high grade corporate bonds, some high-grade stocks.

According to such financial experts as George W. Warnecke, New York investment firm head, who deals largely in construction financing, reasons for this kind of investment boil down to the fact that trustees of most pension plans are not accustomed to thinking in terms of long-term investment (such as mortgages), and because no central agency exists for handling and advising pension funds as to investments.

He pointed out that trustees or fund managers are often treasurers of companies, who are accustomed to think in terms of accounts receivable and inventories.

"The result," he said, "is that the funds have gotten security—but the return is low, compared to what might be earned by mortgage loans for new industrial plants, office buildings etc.

"It's the difference between a 3 to 3½% return and a 5 to 5½ return."

There is little chance that the pension funds will ever directly offer much help in sopping up the enormous backlog of public bonds (ENR June 26, p. 17) that already has some experts worried. The fact that municipal and state bonds are tax-free offers little inducement—in the face of low interest rates—to pension funds which are themselves tax-free.

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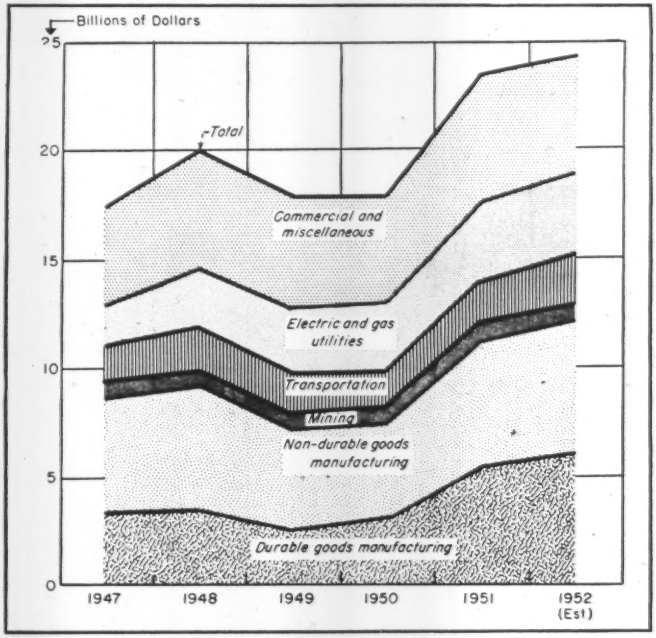


SPENDING for new plant and equipment may reach new high in 1952.

Defense building sets record

"Expansion is now proceeding at a record rate in those industries which make up the industrial segment of the mobilization base," ODM Director John R. Steelman said last week in the Office of Defense Mobilization's sixth quarterly report to President Truman.

The ODM report traced the progress of the expansion programs for steel, copper, and aluminum.

In the past six months, steel capacity has risen by 3.4 million ingot tons, almost equaling the 4.1 million-ton expansion for all of 1951.

Current capacity of 112 million ingot tons is now about 12% above the level of two years ago.

U.S. capacity to produce primary aluminum rose by 100,000 tons—or 10%—in the last six months. Completion of the current expansion program will give the industry a capacity of 1.5 million tons by the end of 1954.

Steelman was optimistic.

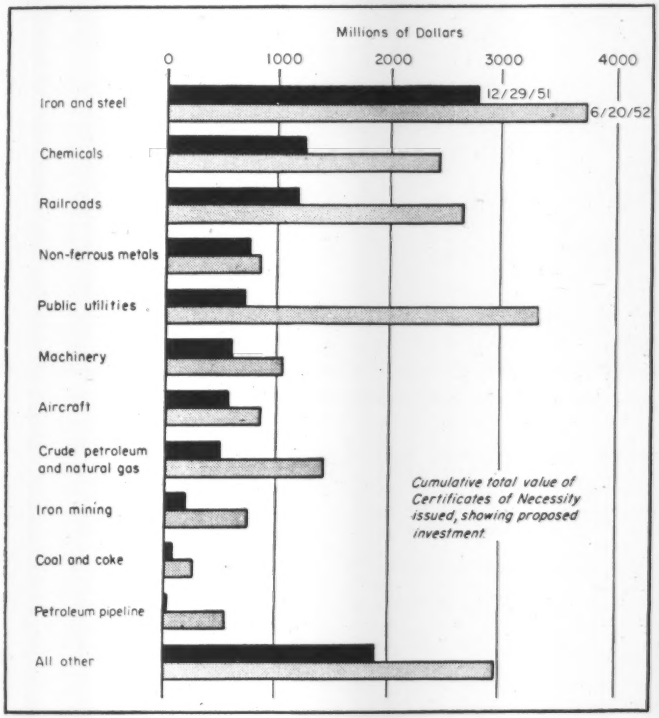
In his report he said, "Reports made to the government by business firms early in the year indicate that 1952 will see a new record in total investment in new plant and equipment—$24.1 billion, which is slightly higher than the $23.3-billion total of 1951 and 35% above the $17.8 billion of 1950.

But Steelman saw a specter.

The problem: the course to be taken when (or if) private industry is not able to finance the total expansion program outlined.

"During World War II, the government undertook the direct construction of plants totaling $30 billion in value," Steelman said. "With a few exceptions, notably the atomic energy program, direct government plant construction has not been authorized during this emergency."

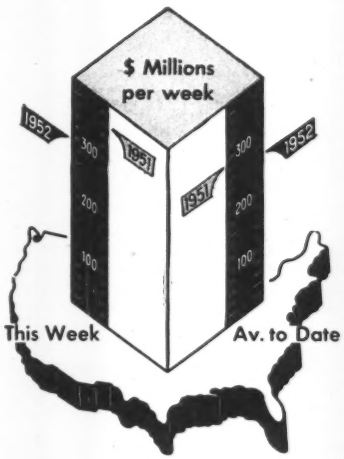
"But in the event that private concerns cannot undertake the full amount of vital expansion programs—particularly the reserve capacity which may have to be created as part of the mobilization base—the question of legislative authority for government plant construction may have to be presented again to the Congress," Steelman warned.



UTILITIES have lead in tax and approvals this year.

Activity This Week

As reported to ENR (in millions of dollars)



Contracts by type of work

	This Week	Cumulative 29 wks 1952	1951	% chge
Waterworks	$1.9	$132.3	$127.0	+4
Sewerage	7.5	150.0	177.5	−15
Bridges	3.3	217.7	181.5	+20
Highways	44.0	865.1	642.8	+35
Earthwork, waterways	9.5	308.8	324.2	−5
Buildings:				
Public	74.0	1,145.9	1,348.6	−15
Housg., pub.	12.7	457.6	507.2	−10
Housg., priv.	54.4	1,687.4	1,115.4	+51
Commercial	18.7	357.1	385.2	−7
Industrial	35.9	1,617.2	2,510.0	−36
Unclassified	33.9	744.3	1,030.3	−32
Total	**$295.8**	**$7,683.4**	**$8,409.7**	**−9**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes		Base Year = 100 1913	1926	1949
Constr. cost.	July	570.65	274.31	119.63
	June	561.69	270.00	117.75
Bldg. cost.	July	414.46	224.04	117.81
	June	412.50	222.98	117.26
Volume	June	543	221	157

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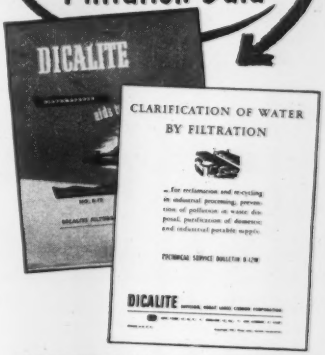

BULLETIN B-12 on general filtration principles; BULLETIN B-12-W details information on filtering potable and waste water.

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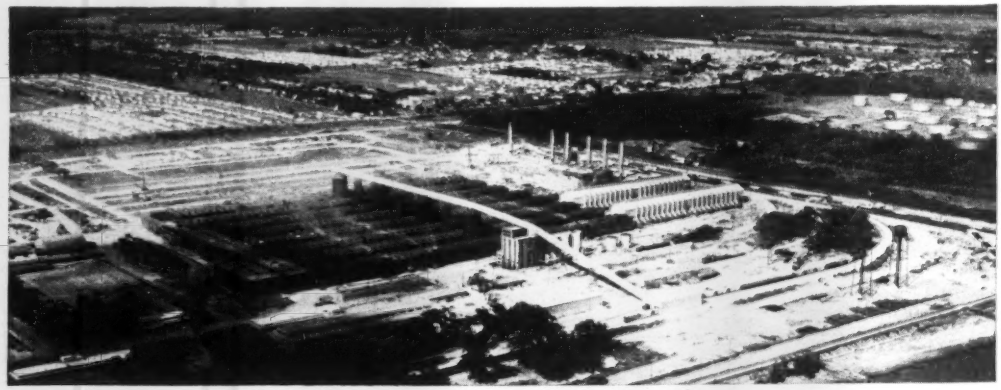

ALUMINUM—400 million pounds a year—will pour from $150-million Kaiser aluminum plant at Chalmette.

Industrial building booms in Louisiana

The industrial revolution which in recent years has been changing the South into something else than the nation's No. 1 economic problem is assuming boom proportions in Louisiana.

The same factors that have made the industrialization of Texas so spectacular are working in the neighboring state of Louisiana, with one difference—in Texas, the boom has been on for 20 or more years—in Louisiana, only in the past five years.

Louisiana's industrial baby, nevertheless, is a lusty youngster.

A conservative estimate of capital investment in new manufacturing plants and expansion of existing ones in the state since the beginning of 1947 places the figure in excess of $900 million. More likely, it has already passed the $1-billion mark.

The figures are based on reports of the State Department of Commerce and Industry on tax exemptions granted for new and expanded plants and on recent National Production Authority certifications for plants on which tax exemption applications must yet be filed.

• **Growing pains**—The industrial growing pains are being felt throughout the state, but more sharply in three areas—around Lake Charles, near the Texas border on the Gulf Coast; in Baton Rouge, across the state in southeast Louisiana, and around New Orleans.

Of the total for the state, more than $450 million has been or will be expended in the New Orleans area.

Underlying this industrial development are certain vast natural resources of the state—particularly oil and natural gas. Louisiana is third in the nation in the production of oil and second as a producer of natural gas. In 1950, N. C. McGowen, president of United Gas Pipe Line Co. estimated that the size of the state's known gas reserves was about 27 trillion cubic feet, making the state second in the nation. And most of this was near New Orleans.

It was natural gas as a fuel that played a major part in bringing to New Orleans the $150-million Kaiser Aluminum and Chemical Corporation plant. And natural gas as a raw product and fuel has brought the $50-million American Cyanamid Company plant to the same area.

In fact, American Cyanamid is considered the nucleus for a vast chemical development in the New Orleans area.

It is the first such plant for the area, but NPA certificates have been granted for a $30-million Lion Oil Company chemical plant, a $19-million nitrogen producing plant by Sid Richardson Gasoline Co., a $15,466,000 nitrogen plant by W. R. Grace & Co., and a $8,892,000 plant of the same kind by Delta Chemical Corp., all near New Orleans.

All of these plants will be situated along the Mississippi River and New Orleans businessmen believe that they mark the beginning of a large chemical empire along the river.

They point to the huge gas reserves and to the high btu content of the gas which makes it one of the finest fresh water supplies in the United States. Nearby are extensive supplies of salt and sulphur.

The river provides one more important advantage—it makes the plants accessible to both ocean and inland waterway transportation.

When New Orleans businessmen say that the industrial boom in their city is just starting, they note that the chemical plants and the Kaiser plant are facilities different than anything the city has had heretofore.

• **More will come**—They are basic industries—the kind that attract others.

The Kaiser plant, for example, already has brought another major industrial plant to the city. This is an aluminum foundry, for the production of aluminum cylinder heads, which may be the largest of its kind in the world.

The foundry will be built by the Chrysler Corporation, which has a $100-million contract for tank engines for production at the Michoud Ordnance plant in New Orleans.

The ordnance plant itself, is being set up at a cost of $70 million.

The Kaiser New Orleans plant—actually, it is in Chalmette just below the city—is one of two operated by the company in Louisiana. A second plant, which produces alumina at Baton Rouge, is now undergoing a $16.5-million expansion and will, when completed produce enough alumina to supply all Kaiser reduction plants.

• **Fastest growing**—The tax exemption

(*Continued on page 131*)

MORE THAN $73 MILLION has been invested in the Ethyl Corporation plant at Baton Rouge, since the end of World War II.

ELMER CONNER, department of commerce, passes on tax exemptions.

figures of the State Department of Commerce and industry indicate that among the fastest growing industries in Louisiana are those in the petroleum and chemical categories.

And those are the ones that are booming in Baton Rouge, up river from New Orleans, and in Lake Charles.

Since the end of the war, for example, the Ethyl Corporation has invested more than $73 million in its petrochemical plant at Baton Rouge.

Nor is the boom in Louisiana's capital on the wane. Industrial expansion during 1951 hit a record total of $131 million, and for the first four months of this year the figure was $45,554,000.

Esso Standard Oil in Baton Rouge has been approved for tax exemptions on more than $43 million of additions to its plant there. When the contemplated expansion is completed, the huge refinery will have a daily output of 270,000 barrels of crude daily.

Further west in the state, where the difference between Louisiana and Texas is largely a matter of geography, one finds Lake Charles, another area of intense chemical development.

One of the more recent and more impressive of these plants is that of the Cit-Con Oil Corporation, jointly owned by the Cities Service Company and the Continental Oil Company. The $42-million plant has been in operation two and one-half years.

Lake Charles also boasts two other major refineries—those of Cities Service and of Continental—and great chemical plants such as those of Mathieson Chemical Corporation and Columbia Southern Chemical Corporation.

New developments started or announced since the beginning of 1951 include a $20-million American Petrochemical Corporation plant; a $7-million Davison Chemical Corporation plant; and a $5-million expansion to the Columbia Southern facility and a $750,000 expansion to the Mathieson plant.

How does Louisiana's tax exemption plan for new industries operate?

The individual contracts between the state and the owner of a proposed new manufacturing establishment or addition to any plant already existing in the state provides for the exemption from both state and local ad valorem taxation of such facilities, including buildings and machinery, for a maximum period of 10 years, after which the exempted property is placed upon the tax rolls.

The plan was in operation from 1936 to 1941, during which $184,000,000 of industrial expansion was tax exempted; was reinstituted in 1946, from which time through the first quarter of 1952, an additional $685,000,000 of industrial expansion was tax exempted.

Not all new industry is tax exempted.

To avoid favoring any one of several competitive manufacturers in the same area, the law also provides that "No exemption shall be contracted for any new manufacturing establishment in any locality where there is a manufacturing establishment actually engaged in the manufacture of the same or closely competitive articles without the written consent of the owner of such existing manufacturing establishment. . . ."

Although most of the state's industrial growth has occurred in recent years along the coastal areas, few sections of the state have been without such growth.

In north Louisiana, for instance, approximately $30 million has been set aside by the International Paper Company for increased production at its mills at Bastrop and Springhill. The Gaylord Container Corporation at Bogalusa has been granted tax exemptions on new capital investments approximating $20 million.

In other parts of southern Louisiana, carbon black plants valued at millions of dollars are being built or are in operation and it has been predicted that the state may soon rank as the nation's top producer of this product.

• **No let-up**—The industrial boom in Louisiana gives no sign of letting up.

In its most recent biennial report, the State Department of Commerce and Industry stated that the state's tax exemption plan reached a record high in the first quarter of 1952.

In that quarter, the report said, the "State Board of Commerce and Industry approved more than $201-million worth of new industrial facilities for tax exemption over a 10-year period."

Among the men who are now leading the drive for further industrialization of the South and the Southwest is a strong feeling that "industry attracts industry."

To these men, the current "industrial revolution" is only the beginning of a long-term trend which opens a big newly-important market for the construction industry.

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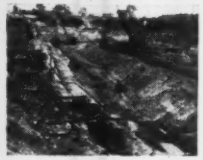
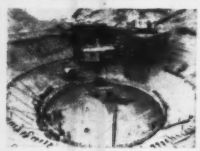


BUILDINGS



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UNIT PRICES

Five types of test drilling for West Virginia Turnpike

Unit prices are reported here for four contracts—three major bridges and a tunnel—for subsurface investigations on the route of the West Virginia Turnpike. Type A and A-T borings are to be sunk for the purpose of securing ordinary dry samples. Type B borings are to be sunk to secure both ordinary and undisturbed dry samples. Borings made in rivers of sufficient depth to require the use of floating apparatus are designated Types C and D; Type C for ordinary dry samples; and Type D for both ordinary and undisturbed dry samples. Type E and E-T are for the purpose of securing rock cores. Auger borings must be made with power operated screw-type augers.

D. Holmes Morton is Chairman of the West Virginia Turnpike Commission. Howard, Needles, Tammen & Bergendoff are the consultants, J. D. Welch, the Soils Engineer.

Work on all projects began June 16th. Completion schedules are: Contract 1A, 30 days; Contract 1B, 30 days; Contract 1C, 60 days; and Contract 1D, 75 days. Liquidated damages are set at $100 per day for all contracts. For each calendar day the Contract is completed prior to the time specified, the Commission will pay the Contractor $100 as a bonus.

Bidders include:

Bids: 6-10-52
1C Mott Core Drilling Co. Inc. Huntington, W. Va. — only bidder
Contract 1A, Bluestone River Bridge $3,200
Contract 1B, Fourmile Fork Bridge 3,590

Item	Unit	Contract 1A Quan.	U. P.	Contract 1B Quan.	U. P.
Land borings, type A	lf	50	$10.00	60	$10.00
type B	lf	20	15.00	20	15.00
Auger borings	lf	350	5.00	400	5.00
Core borings, type E	lf	70	8.00	60	10.00
Undisturbed samples	ea	2	45.00	2	45.00

Contract 1C—Standard Tunnel
1C Giles Drilling Corp., New York City $7,264
2 Mott Core Drilling Co. Inc., Huntington 9,040

Item	Unit	Quantity	Unit Prices 1 C	2
Land borings, type A-T	lf	100	$4.54	$5.65
Core borings, type E-T	lf	1,500	4.54	5.65

Contract 1D—Kanawha River Bridge
1C Mott Core Drilling Co. Inc., Huntington $18,785
2 Tinney Drilling Co., Grafton, W. Va. 22,850

Item	Unit	Quantity	Unit Prices 1 C	2
Land borings, type A	lf	2,600	$3.85	$4.60
type B	lf	1,100	4.35	5.40
Auger borings	lf	100	2.50	3.00
River borings, type C	lf	150	4.35	6.50
type D	lf	75	5.50	6.00
Core borings, type E	lf	500	4.00	6.00
Undisturbed samples	ea	15	45.00	15.00

Water treatment plant, N.Y.

Bid prices are shown here for the construction of a 36-mgd water treatment plant building, 260 x 32 x 56 ft, for the City of Rochester, N. Y. Separate contracts were awarded for the plumbing, electrical, heating and ventilating. The City will furnish the pumps, motors, large valves, filtration, sterilization, recording and laboratory equipment, controllers, gages, chemical feeders, and steel fabrication and erection for the building.

Work began May 29, 1952 and must be complete in one year.

Bidders include:

1C A. Frederick & Sons Co., Rochester, N. Y. $1,184,661
2 John Luther & Sons Co., Rochester, N. Y. 1,406,630
3 James McHugh Constr. Co., Chicago 1,701,250

Bids: 2-7-52 Items	Unit	Quantity	Unit Prices 1 C	2
Gen contract	ls	1	$1,179,973	$1,402,000
Rock exc	cy	10	$45.00	$24.00
Extra concrete	cy	50	41.00	50.00
reinf. steel	lb	5,000	0.12	0.11
earth excavation	cy	50	1.25	5.00
structural steel	lb	5,000	0.17	0.15
steel sheet piling	lb	2,000	0.14	0.17

Sewerage system, Nebr.

Clay pipe and an activated sludge treatment plant took the contract for the sewer system and plant for Cedar Bluffs, Nebr. W. J. Parker Construction Co.'s bid of $76,258 was the low of the seven bids for the activated sludge plant and only 7% higher than the low for a plant with Imhoff tank. It was 12% below the project estimate of Wilmer G. Johnson of Wahoo, and Donald D. Price, of Lincoln, the consultants. Parker's bid of $1.60 per lf for 6-in. clay sewer pipe was below all the other bids.

For comparison the unit prices are shown below for the three bids for the activated sludge plant, including the additions or deductions for adjusting, and for two of the bidders on both types of plants. One contractor bid the Imhoff tank only.

1C W. J. Parker Const., Omaha, Nebr. $76,252
2 Watt-Meese Const. Co., Wahoo, Nebr. 80,681
3 Charles Robek Co., Omaha, Nebr. 84,076

Bids: 4-25-52 Items	Unit	Quantity	Unit Prices 1C	2
Clay pipe, 6"	lf	12,560	$1.60	$1.87
8"	lf	3,083	1.95	1.95
Manholes, 37	vf	286	25.00	18.00
Cast iron pipe, 4"	lf	1,400	2.50	3.00
Lift station, complete	ls	1	5,000	6,225
Activated sludge type plant Wet well, pump house, aerator, digester & sludge beds	ls	1	34,500	35,609
Additions or deductions				
Concrete, class 3	cy		35.00	75.00
Excavations	cy		2.00	1.00
Reinforcing steel	lb		0.20	0.15
Copper water pipe, laid in sewer ditch	lf		0.90	1.64

	Imhoff tank	Activated sludge
Dobson Bros., Lincoln, Nebr.	$70,969	$81,169
Jansen Const. Co., Beatrice, Nebr.	74,434	76,934

Bids: 4-25-52 Items	Unit	Quantity	Unit Prices Dobson	Jansen
Clay pipe, 6"	lf	12,560	$1.61	$1.75
8"	lf	3,083	1.88	2.00
Concrete pipe, 6"	lf	12,560	1.61	1.75
8"	lf	3,083	1.88	2.00
Manholes, 37	vf	286	19.50	25.00
Cast iron pipe, 4"	lf	1,400	2.41	2.25
Lift station, complete	ls	1	$6,250	$8,488
Standard type plant, Wet well, pump house, Imhoff tank, filter, final tank & sludge beds	ls	1	29,750	27,500
Activated sludge type plant Wet well, pump house, aerator, digester, & sludge beds	ls	1	39,950	30,000

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 22, Massachusetts
STREETS AND ROADS
July 22, Massachusetts

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Arthur E. Magher Co., Inc.,** 173 Christopher St., New York, N. Y. LB $1,276,690, est. $1,000,000. CLIMATIC CHAMBERS BLDG. for Quartermaster Research & Development Laboratory on shores of Lake Cohituate, ENG 19-016-52-63, NATICK, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids June 27. CD 6/6.

▲ **Veterans Admin.,** Munitions Bldg., 21 and Constitution Ave. N.W., Wash., D. C. rejected bids June 24, conversion Bldg. No. 1 to G M & S and PARAPLEGICS for Veterans Admin. Hospital, Proj. 30-5173, WEST ROXBURY, MASS. LB $1,197,000. CD 6/27, under LB.

▲ **A. F. Peaslee, Inc.,** 15 Lewis St., Hartford, Conn. LB $2,918,460, HIGH SCHOOL, Burnside Ave., EAST HARTFORD, CONN. Town, School Bldg. Comn., Town Hall, East Hartford, Conn. Bids June 26. CD 6/10.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 29, New Jersey July 31, New York

▲† **Del, Dover**—QUARTERS—B.A. 8/5—U. S. Eng., 121 N. Broad St., Phila 1, Pa., 6 bachelor officer's quarters, Dover Air Force Base, $1,000,000, Whiteside, Foster, Damon & Doane Inc., DuPont Bldg., Wilmington, archt. CD 6/27.

BIDS ASKED—BUILDINGS

▲ **N. J., Hackensack**—SCHOOL—B.A. 7/21—Bd. Educ., 355 State St., Beech St. School. $1,350,000.

▲ **N. Y., Oceanside**—HIGH SCHOOL—B.A. 7/23—Bd. Educ., Union Free School Dist. 1, Oceanside Junior High School, $1,360,000.

▲† **N. J., Fort Dix**—HEADQUARTERS—B.A. 7/24—U. S. Eng., 121 N. Broad St., Phila. Pa., post headquarters and admin bldg., other bldgs., utilities and site imprvs., $3,300,000. John L. Kistner, Harrison St., Phila., Pa., engr. Frank Grad & Son, 11 Commerce St., Newark, archts. CD 6/20.

▲ **Pa., Blooming Glen**—HIGH SCHOOL—B.A. 8/6—Upper Bucks County Joint School Auth., Perkasie, Penn Ridge High School. Bldg. $2,000,000. Albert E. Micklewright, 72 Ewing St., Trenton, N. J., archt. CD 5/21.

▲ **Md., Rockville**—SCHOOL—B.A. 8/21—Montgomery Co. Bd. Educ., Rockville, Wheaton Junior-Senior High School, $2,000,000. Plans deposit $150, Ronald S. Senseman, 327 Carroll St., N. W., Wash., D. C., archt. CD 4/3.

▲ **N. Y., Long Island City**—BARRACKS—B.A. About 9/3 U. S. Eng., 90 Lafayette St., New York, Zone 13, barracks and facilities at Signal Corp Photo Center. $500,000-$1,000,000. Frederick G. Frost & Zimmerman & Luks, 144 E. 30 St., New York, archts. CD 9/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **Hendrickson Bros., Inc.,** 63 N. Central Ave., Valley Stream, N. Y. CA. $559,853, est. $630,000, 1.19 mi. Peninsula Blvd. (Merrick Rd.—Ocean Ave.), Cont. 2, FA-SS 52-7, Nassau Co.;
Louis Longhi & Son, Inc., Box 580, Glens Falls, N. Y., CA $507,785, est. $587,000. 3.14 mi. Central Bridge-Sloansville, S. H. 1215, FA-RC 52-20, Schoharie Co.;
H. L. Baughman, Inc., Rte. 246, E. Henrietta Rd., Rochester, N. Y. CA. $1,779,471, est. $1,990,000, 1.98 mi. New York State Thruway-Ontario Sect. Subdivision 8B and 9 (East River Rd. to Rte. 65); West Henrietta-Rochester S. H. 62; Rush-Henrietta S. H. 1283; East River Rds; Middle Rd.; Pinnacle Rd.; Pittsford-Henrietta Town Line Road-Return Loop, O. T. 52-6, R. C. 52-31, S. T. 52-9, Monroe Co.;
Savin Constr. Corp., 10 Village St., East Hartford, Conn., CA. $3,190,954, est. $3,457,000, 7.22 mi. New York State Thruway-The Mohawk Sect.—Subdivision 2 and 3 and City of Oneida (Court St. County Rd.; Canastota-Durhamville County Rd.; Schoolhammer Road Cut-Off) and Canastota Village, S. H. 908, M. T. 52-3, M. T. C. 52-4, S. T. 52-7, R. C. 52-33, Madison Co. Grand total $6,038,063. Bids Apr 16. CD 4/21 under LB.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
D. W. Winkelman Co., Inc., Heffernan Bldg., Syracuse, N. Y. CA. $4,392,669, grading, paving with twin 25 ft. concrete arteries 6.4 mi. Ontario Sect. of the New York State Thruway from Warners, easterly to the existing Thruway pavement east of Rte. 370, Onondaga Co.;
John Arborio, Inc., West Cedar St., Poughkeepsie, N. Y. CA. $1,526,339, reconstruct 7.83 mi. Rte. 22, Columbia and Dutchess Counties;
Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, N. Y. CA. $1,952,101, paving with twin 25 ft. concrete arteries, 7.25 mi. of the Thruway, construct 3 highway grade separation structures, misc. work 9.12 mi. Onondaga Co. Grand total $7,881,109. Bids Apr. 30. CD 5/2, under LB.

▲ **Almirall & Co., Inc.,** 53 Park Pl., New York 7, N. Y. CA. $2,936,180. Contr. P-79, piping and misc. equip. for 74th St. Power Plant, NEW YORK, N. Y. Bd. Transportation, 370 Jay St., Brooklyn 1, N. Y. Bids Nov. 21. CD 12/10, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bay Gardens Corp.,** c/o William Dowling, archt., 350 Fifth Ave., New York 1, N. Y. Owner Builds. $1,365,000. 100 HOUSES, 212 St. and Bell Blvd., south of Cross Island Parkway, BAYSIDE, N. Y.

▲ **Linfleet Realty Corp.,** c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. $1,620,000 6 six-story APARTMENTS on tract at North Terrace and Fleetwood Aves., FLEETWOOD, N. Y.

▲ **P. Kretzer & Son,** 32-15 Lawrence St., Flushing, N. Y. CA. Approx. $3,000,000. 2 story, 250x850 ft., distributing WAREHOUSE, E. 132 St. Adjoining Harlem River Yards, NEW YORK, N. Y. New York, New Haven & Hartford R.R. Co., P. T. Polson, ch. engr., 54 Meadow St., New Haven 6, Conn. Praeger-Maguire, 126 E. 38 St., New York 16, N. Y., archts. CD 7/13/45.

▲ **Southwood-at-Syosset Homes,** c/o A. H. Salkowitz, archt., 37-60 82 St., Jackson Heights, N. Y., Owner Builds. $4,500,000. 515 HOUSES on 120 acre tract on South Oyster Bay Rd., SYOSSET, N. Y.

▲† **Montgomery Constr. Co.,** 803 W. Main St., Grove City, Pa., LB $1,477,000. various BUILDINGS, utilities, railroad facilities and roads, etc. Letterkenny Ordnance Depot, CHAMBERSBURG, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Modjeski & Masters, State St. Bldg., Harrisburg, Pa., engrs.

▲ **L. H. Ludwig, Inc.,** 20 W. Main St., Falconer, N. Y. CA. Approx. $1,099,313, COURT HOUSE addn., alterations, MEADVILLE, PA. Bd. Comrs. Crawford Co., Court House, Meadville, Pa. Bids June 12. CD 7/10, under LB.

▲ **Brotherton Constr. Co.,** 1025 S. 21 St., Harrisburg, Pa., CA. $1,426,925, general constr. Junior-Senior HIGH SCHOOL CAFETERIA, ELEMENTARY SCHOOL, OXFORD, PA. Oxford Area Joint School Auth., Oxford, Pa. Bids May 13. CD 5/21, under LB.

▲† **N. DiTommaso,** 542 E. Haines St., Phila., Pa., CA $1,243,272, addn. BOILER TEST FACILITIES, bldgs., etc. NOY 70148, Spec. 31782, PHILA., PA. Dpt. Navy, Phila. Naval Base, Phila., Pa. CD 3/11.

▲ **Wark & Co.,** 1920 Sansom St., Phila., Pa., CA. $6,000,000. HOSPITAL alterations, new NURSING UNIT, and paving, PHILA., PA. Jefferson Hospital, 1025 Walnut St., Phila., Pa. Bids May 28. CD 5/8.

▲† **D. H. Dave, Inc., and Gerben Contg. Co.,** 188 Montague St., Brooklyn, N. Y. CA $1,383,000. 6 SCHOOL SHOPS, Utilities, etc., ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. CD 5/6, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction
(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

STATE HIGHWAY LETTINGS
BRIDGES
July 23, Louisiana July 25, Tennessee
STREETS AND ROADS
July 22, West Virginia July 23, Louisiana
July 25, Tennessee

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Tennessee**—TUNNEL—B.A. 8/1—State Hy. Dpt. & P. Wks., Cotton States Bldg., Nashville, construct vehicular tunnel and reconstruct existing tunnel through Missionary Ridge at McCallie Ave., in Chattannooga, Proj. SAP 979-A, Hamilton Co.; adv. ENR 7/17. CD 6/20.

BIDS ASKED—BUILDINGS

▲ **Ky., Ford**—POWER GENERATING STATION—B.A. 7/24—East Kentucky Rural Co-operative Corp., Winchester Dale Power Generating Station, Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engrs. CD 12/16/49.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Brown & Root, Inc.,** 4100 Clinton Dr., Houston, Tex., LB $4,121,169, construct Los Olas Boulevard toll tunnel, at Fort Lauderdale, FLORIDA. State Rd. Dpt., Tallahassee, Fla. Bids July 2. CD 5/7.

▲† **Ray Constr. Co.,** Mobile Hy., Pensacola, Fla., LB $1,226,300, Dannelly Field imprvs., MONTGOMERY, ALA. Alabama Natl. Guard Bureau, State Capitol, Montgomery, Ala., Bids June 23. CD 6/13.

▲† **J. B. Michael & Co., Inc.,** 1021 Heywood St., Memphis, Tenn. CA $1,177,000. 7,000 ft. asphaltic concrete runway, 2,000 ft. taxiway, 7,000 ft. creek channel relocation 14,000 ft. levee, Key Field, MERIDIAN, MISS. U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala. CD 6/17, under LB.

▲† **J. A. Jones Constr. Co.,** P. O. Box 1818, Shreveport, La. CA $1,088,060. Warehouse, at Barksdale Air Force Base, Inv. 52-54, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. CD 7/1, under LB.

▲† **Terry & Wright Inc.,** W. 8 St., New Albany, Ind. CA $2,465,633, est. $2,346,297. Sect. C, flood wall, Covington, Kenton Co., KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 18, awarded June 30. CD 6/23.

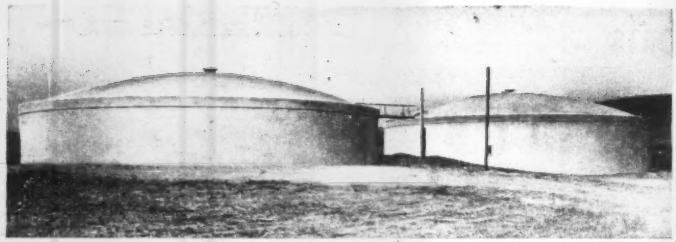
▲† **General Electric Corp.,** Starks Bldg., Louisville, Ky. CA $1,250,000. Equipment incl. switchgear and substation for Beargrass Creek Pumping Plant, KENTUCKY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids June 24, awarded June 30. CD 6/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Morris Cafritz Co.,** 1404 K St. N. W., and **Charles Tompkins Co.,** 907 16 St. N. W., both Wash. D. C. CA $60,000,000. 4,800 unit APARTMENT near Pentagon, ARLINGTON, VA. Ambassador, Inc., 1404 K St., N. W. and H Street Building Inc., 907 16 St. N. W., Wash., D. C. Wm. Denton, Jr., 1719 I St. N. W., Wash., D. C., archt. Work will start in 1953.

▲ **Doyle & Russell,** Central Natl. Bank Bldg., Richmond, Va., CA. Approx. $3,000,000. 110,000 ft. floor space paper products PLANT, 1850 Ninth St. Rd., RICH-



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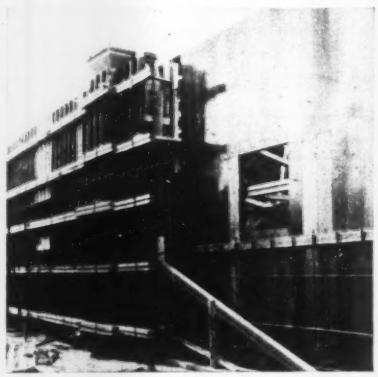

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MOND, VA., Manchester Board & Paper Co., Canal near Hull Sts., Richmond, Va., Slaughter, Saville & Blackburn, Law Bldg., Richmond, Va., engrs.-archts. CD 4/19/51.

▲† **O. W. Godwin**, Dunn, N. C. CA. **$1,121,553**, impvs. company MESS HALLS and OPERATING SUITES, ENG 31-075-52-30, FORT BRAGG, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids June 25. CD 6/11.

▲ **Virginia Eng. Co.**, Melson Bldg., Newport News, Va. CA. **$6,000,000**. Meter mfg. PLANT, U. S. Hy. 1, near RALEIGH, N. C. Westinghouse Electric Corp., Meter Div., 95 Orange St., Newark, N. J. CD 5/26.

▲† **J. A. Jones Constr. Co.**, 133 Ellis St. N. E., Atlanta, Ga., CA. **$11,863,713**, misc. BUILDINGS, appurtenances, ENG 09-133-52-51, FORT BENNING, GA. U. S. Eng., Post Office Bldg., Savannah, Ga. Bids June 25. CD 7/1 under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 22, Ohio
STREETS AND ROADS
July 22, Indiana July 22, August 12, Ohio

BIDS ASKED—BUILDINGS

▲ **Ill., Park Forest**—HIGH SCHOOL—B.A. 7/24—School Dist. 227, City Hall, 2 story, face brick, stone, steel, concrete Rich Township High School, $1,250,000. Loebl, Schlossman & Bennett, 430 N. Michigan Ave., Chicago Zone 4, archts. Alfred Benesch, 30 E. Adams St., Chicago, Zone 3, engr. CD 1/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Merrick-Kleist Constr. Co.**, 19055 West Lake Rd., Rocky River, O. Owner Builds. **$2,000,000**. 200 HOUSES W. 158 St. area near Puritas Rd., CLEVELAND, O.

▲ **Haig M. Boyajohn & Assoc., Inc.**, 990 W. Third Ave., Columbus, O., CA **$2,257,600**, 360,000 sq. ft. brick, steel, concrete WAREHOUSE; CA **$447,200**, expansion of BOILER HOUSE to increase capacity by 150,000 lbs., COLUMBUS, O. North American Aviation, Inc., 4300 E. 5 Ave., Columbus, O. Awarded July 3.

▲ **Midwest Building Co.**, 1224 E. Miner Rd., Mayfield Heights, O. Owner Builds. **$1,500,000**. 90 HOUSES in Wallingford Rd. area off Quilliams Rd., SOUTH EUCLID, O. Frank Miller, c/o owner, engr.

▲ **Jessup & Waddy Co.**, 4728 E. 21 St., Indianapolis, Ind. Owner Builds. **$2,000,000**. 150 HOMES, OAKLANDON, IND.

▲ **Roxbury Builders, Inc.**, 2844 W. Jarvis Ave., Chicago, Ill. CA. **$1,100,000**. 58 HOMES in Kedzie Ave. and Devon Ave. area, CHICAGO, ILL. Kenneth I. Russ Syndicate, 134 N. LaSalle St., Chicago 2, Ill. Awarded July 1.

▲† **W. E. Schweitzer Co.**, 2207 Dodge Ave., Evanston, Ind. CA. **$2,196,500**. Technical Service SCHOOL, GREAT LAKES, ILL. Ninth Naval Dist., Dist. P. Wks. Office, Great Lakes, Ill. Bids June 20, awarded June 30. CD 7/2, under LB.

▲ **Mazzucco Constr. Co.**, 4 E. Clinton Ave., Joliet, Ill., LB **$2,000,000**. CHURCH-CATHEDRAL, 604 N. Raymond Ave., JOLIET, ILL. St. Raymonds Parish, 4 E. Clinton St., Joliet, Ill. R. J. Graham, 343 S. Dearborn Ave., Chicago 4, Ill., engr. Bids June 10. CD 5/28.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
July 25, Kansas
STREETS AND ROADS
July 25, Kansas, Minnesota

▲ **Tex., Austin**—B.A. 8/8—City, c/o Walter Seaholm, city mgr., City Hall, 25 m.g.d. filter plant, high service pump station, $1,500,000. Plans deposit $50. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 5/1/51.

BIDS ASKED—BUILDINGS

▲ **Tex., Corpus Christi**—REFINERY, etc.—Bids Asked—Suntide Refining Co., c/o Sunray Oil Corp., 1st Natl. Bldg., Tulsa, Okla., 25,000 bbl. refinery, $14,000,000; gasoline products storage farm, $550,000; some crude oil gathering lines, $150,000, near here. CD 7/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. L. Shiely Co.**, 1101 Snelling Ave., St. Paul, Minn. CA. **$1,088,990**, concrete aggregate for Garrison Dam and Reservoir Proj., Inv. 52-52, NORTH DAKOTA. U. S. Eng., Fort Lincoln, P.O. Box 300, Bismarck, N. D. Bids June 3. CD 6/12, under LB.

▲ **Koss Constr. Co.**, 205 Farm Bureau Bldg., Des Moines, Ia. CA. **$1,439,270**, est. $1,544,932. Wichita Municipal Airport imprvs., incl. 6- to 12-in. reincon., 271,029 sq. yd. paving, 30,672 cu. yd. 4 in. subbase course, 281,870 sq. yd. subgrade tr., etc.,

WICHITA, KAN. Wichita Bd. Park Comrs., City Hall, Wichita, Kan. Ediger Eng. Co., P.O. Box 145, Wichita, Kan., engr. CD 10/4/51.

▲† **Glade Constr. Co.**, Century Bldg., Fort Worth, Tex., CA. $1,814,242, dormitories, mess and admin. bldgs. Inv. No. Eng. 34-066-52-77, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 25. CD 7/3, under LB.

▲† **E. B. Bush Constr. Co.**, 4000 W. Reno St., Oklahoma City 4, Okla., LB. $2,294,056, est. $1,500,000. ten 3 story dormitories, 3 mess halls and one admin. bldg., ARDMORE, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids July 1. CD 6/25.

▲† **Glade Constr. Co.**, 403 Century Bldg., Fort Worth, Tex., CA. $1,775,400, Lot 1, airmens dormitories, Inv. No. ENG 41-243-52-112, KELLY AIR FORCE BASE, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids June 20. CD 6/25, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Steenberg Constr. Co.**, 1371 Marshall Ave., St. Paul, Minn. CA $819,889, WAREHOUSE, Inv. 52-123; **Fleisher Engineering & Constr. Co.**, Builders Exchange Bldg., Minneapolis, Minn. CA $581,567, MANUFACTURING BLDG., Inv. 52-124, Twin Cities Arsenal, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 7/7, under LB.

▲† **Ring Constr. Co.**, Metropolitan Bldg., Minneapolis, Minn. and **Orville E. Madsen**, Sexton Bldg., Minneapolis, Minn. CA $1,032,800. rehabilitation, addns. to BUILDING No. 503, Twin Cities Arsenal, Inv. 52-122, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 7/7, under LB.

▲ **W. Murphy & Sons**, 416 New York Bldg., St. Paul, Minn. Total est. $3,000,000. 2 story, 130,000 sq. ft. FACTORY and WAREHOUSE, E. 7 St. and Fauquier Ave., ST. PAUL, MINN. Minnesota Mining & Manufacturing Co., 900 Fauquier Ave., St. Paul, Minn.

▲ **Barnhart Bros. Constr. Co.**, 1130 W. 27 St., Independence, Mo. Owner Builds. Est. $1,000,000. 90 HOUSES, Rock Wood Heights sub-division, Northern Blvd., Hardy Ave., 28 to 31 Sts., INDEPENDENCE, MO.

▲† **R. P. Farnsworth & Co.**, 440 N. Foster Dr., Baton Rouge, La., CA. $1,818,175, Lot No. 1, 6 BARRACKS; CA $2,068,119, Lot 2, 7 BARRACKS; CA $2,471,184. Lot 3, 8 BARRACKS, Inv. No. Eng 34-066-52-69, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Grand total $6,357,478. Bids June 27. CD 6/25, under LB.

▲† **T. C. Bateson Constr. Co., Inc.**, 1102 Irwin-Keasler Bldg., Dallas, Tex., LB $2,601,431, 2 story, bsmnt., 190,000 sq. ft., concrete block or hollow tile walls, ACADEMIC BLDG., Inv. No. Eng 34-066-52-72, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 15. CD 5/19.

▲† **T. C. Bateson Constr. Co.**, Irwin-Keasler Bldg., Dallas, Tex., CA. $2,012,748, six 225-man masonry, concrete frame BARRACKS, all appurtenances, Inv. No. Eng. 41-443-52-51, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids June 19, awarded July 2. CD 6/24, under LB.

Walter Kidde Const. Co., 1205 Holman St., Houston, Tex. CA $944,000. design and construct, FACTORY—OFFICE unit, FORT WORTH, TEX. Chicago Pneumatic Tool Co., 5000 Hy. 81, Fort Worth, Tex. CD 7/8.

▲† **Thickol Corp.**, c/o Longhorn Ordnance Plant, Karnak, Tex., CA. $32,000,000. construction and operation, PLANT for mfg propellant powder for guided missiles, etc., at Longhorn Ordnance Plant, KARNAK, TEX. U. S. Eng., First and Douglas Sts., Wash., D. C. CD 6/11.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

July 30, California

STREETS AND ROADS

July 30, 31, California

BIDS ASKED—BUILDINGS

▲ **Calif., Fresno**—HIGH SCHOOL—B.A. 8/14—Fresno City Unified School Dist., Fresno, Sequoia Junior High School, $1,220,000. Swartz & Hyberg, Rowell Bldg., archts. CD 7/13/50.

SOON LETS CONTRACT—BUILDINGS

▲ **Ore., Portland**—OFFICE—Lloyd Corp., 720 N. E. 12 St., soon lets contract, 8 story office for occupancy by Bonneville Power Admin. $3,500,000. John Graham, Dexter Horton Bldg., Seattle, Wash., archt. CD 5/16/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. Kenneth Thayn**, 2670 Berkeley Circle, Salt Lake City, Utah, CA. $1,431,529, rehabilitation roads, railroads at U. S. Naval Ammunition Depot, Spec. 34609. NOY 73490, HAWTHORNE, NEV. Twelfth Naval Dist., San Bruno, Calif. Bids June 24, awarded July 3. CD 7/1, under LB.

▲† **Howard S. Wright & Co.**, 407 Yale Ave. N., Seattle, Wash. LB $2,772,488. 28x0785 ft., steel, frame concrete hangar, SEATTLE, WASH. Boeing Airplane Co., 7400 E. Marginal Way, Seattle, Wash. Bids July 2. CD 6/20.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Charles L. Harney, Inc., 575 Berry St., San Francisco, Calif., LB $2,905,604, superstructure and portion of

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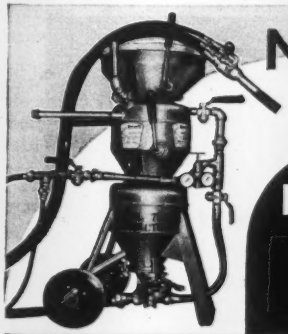

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substructure for portion of bridge and misc. roadway on 13 St. between Mission St. and Rt. 88 San Francisco Co.

Harold Smith, 1427 Kearney St., St. Helena, Calif., LB $81,284, 2 rein.-con. bridges and 0.3 mi. grade and roadmix surf. on cem.-tr. import. base and apply seal coat approaches, at Dry Creek and Dry Creek Overflow, 2.2 mi. west of junction of Rtes. 89 and 49 in Middletown, Lake Co. Bids July 2. CD 6/9.

▲ † **Del E. Webb Const. Co.**, 5101 San Fernando Rd., Los Angeles 39, Calif., CA. $2,094,783, utilities at Inv. 52-12, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 24, awarded July 2. CD 7/1, under LB.

▲ **Connolly-Pacific Co.**, P.O. Box 1251, Pier A, Long Beach, Calif., CA. $1,811,800, quay wall, Pier D, Berths 32, 33 and 34, LONG BEACH, CALIF., Long Beach Port Mgr., 1333 El Embarkadero, Long Beach, Calif. Bids June 24, awarded July 1. CD 7/1, under LB.

▲† **Alliance Constr. Co.**, 308 Monterey Rd., South Pasadena, Calif., CA. $1,094,800, 60-bed hospital at Edwards Air Force Base, ENG 04-353-52-66, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 25, awarded July 1. CD 7/7, under LB.

▲ † **M. H. Golden Constr. Co.**, 3405 Noel St., San Diego, Calif., CA. $1,054,434, developing facilities at Fleet Air Defense Training Center, NOY 71060, Spec. 32614, SAN DIEGO, CALIF., Eleventh Naval Dist., San Diego, Calif., Bids June 6, awarded July 2. CD 6/16, under LB.

† **George F. Brayer & Severin Electric Co.**, 286 12th St., San Francisco, Calif., CA. $839,000. modernize electric and generating sys., at Mare Island, Spec. 34585, VALLEJO, CALIF., Twelfth Naval Dist., San Bruno, Calif. Bids June 18, awarded July 3. CD 7/3, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **David M. Sweeney Constr. Co.**, Idaho Falls, Idaho, CA. $1,110,849, construct 32 open type WAREHOUSES.

Davis & Butler, Dooley Bldg., Salt Lake City, Utah, CA $129,235, construct M-50 bomb washout bldg. at Deseret Chemical Depot. Tooele Ordnance Depot, TOOELE, UTAH. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. CD 12/3.

▲ † **Allison-Honer Co. and Cox Bros. Constr. Co.**, Box 734, San Clemente, Calif., CA $2,941,000. exten. FIELD TRAINING FACILITIES, Camp Pugas at Marine Barracks, NOY 72622, Spec. 33812, CAMP PENDLETON, CALIF. P. Wks. Bldg., Eleventh Naval Dist., San Diego, Calif. Bids May 21, awarded July 2. CD 6/9 under LB.

▲ † **Allison-Honer Co. & Cox Bros. Constr. Co.**, Box 734, San Clemente, Calif., CA. $3,243,748, expansion of FIELD TRAINING FACILITIES, Camp San Mateo, NOY 72621, Spec. 33811, CAMP PENDLETON, CALIF., Eleventh Naval Dist., San Diego, Calif. Bids June 16, awarded July 2. CD 6/18, under LB.

▲ † **Peter Kiewit Sons Co. and Fred J. Early Jr., Co. Inc.**, 345 Kieways St., Arcadia, Calif., CA. $2,920,876. expansion of FIELD TRAINING FACILITIES, Camp Horne, NOY 72624, Spec. 33814, CAMP PENDLETON, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids June 12, awarded July 2. CD 6/18, under LB.

▲ **Harris Constr. Co. Inc.**, 264 Palm Ave., Fresno, Calif., CA. $1,081,412, Roosevelt HIGH SCHOOL, FRESNO, CALIF., Fresno City Unified School Dist., 2348 Mariposa St., Fresno, Calif. Bids June 26, July 7. CD 7/8, under LB.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **M. J. Kuney Co.**, N 120 Ralph St., Spokane, Wash., CA $2,850,000, est $3,131,608. aircraft parking apron, Inv. 52-22, Eielson Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska, Bids June 20. CD 6/25 under LB.

▲† **J. H. Pomeroy & Co.**, 333 Montgomery St., San Francisco, Calif., LB $6,867,000. rehabilitate P.O.L. facilities, construct concrete parking apron, two 2-story frame barracks, 42x48 ft. cold storage bldg. a Thornbrough Air Force Base, Spec. 31607, also work at Adak, under Spec. 32982 and at Shemya, Spec. 31606, ALASKA. P. Wks. Office, 17th Naval Dist., Kodiak, Alaska. Bids July 2. CD 6/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **L. E. Baldwin, Inc.**, 1103 N. 36 St., Seattle, Wash. CA. $1,492,396, 11 story, 141x200 ft. rein.-con. APARTMENT, KETCHIKAN, ALASKA. Wingren Court Apartments, Ketchikan, Alaska. CD 6/23.

CANADA

SOON LETS CONTRACT—BUILDINGS

▲ **Man., St. Boniface**—HOSPITAL—Hospital Expansion & Building Fund, St. Boniface, soon lets contract, 8 story, wing, steel St. Boniface Hospital, incl. remodeling present structure, demolition of north wing, $5,500,000. Green, Blankstein & Russell, 310 Time Bldg., Winnipeg, archts. CD 6/20/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ONTARIO**—Province of Ontario, Dpt. Hys., Toronto, **Carter Constr. Co. Ltd.**, 419 Cherry St., Toronto, Ont. CA $1,000,000. grading, structures on Queen Elizabeth Way, incl. Cloverleaf at Dixie Rd. CD 11/5/43.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Poole Constr. Co. Ltd.**, 10503 109 St., Edmonton, Alta. CA $1,000,000. grading, installing utility services and concrete work in connection with new nickel REFINERY, FORT SASKATCHEWAN, ALTA. Sherritt Gordon Mines Ltd., 25 King S. W., Toronto, Ont. Chemical Constr. (Pan-American) Ltd., 74 Wellington St. W. Toronto, Ont., engrs. Awarded July 2.

▲ **Baynes Manning Ltd.**, 1010 Seymour St., Vancouver, B. C. LB $1,951,698. 5 story, 250x300 ft., rein.-con. T-shaped HOSPITAL incl. 40 ft. wide wings, TRAIL, B. C., Trail-Tadanac Hospital, Trail, B. C. Bids June 27. CD 6/6.

▲ **Home Constr. Co.**, 45 Old Park Rd., Toronto, Ont. CA Approx. $2,730,000. two hundred and sixty-six 1½ story, brick HOUSES, Frederick St. limits, KITCHENER, ONT. City, Kitchener, Ont. CD 12/14.

▲ **Richard F. B. A. Ryan Ltd.**, 1705 William St., Montreal, Que. CA Approx. $5,000,000. 200x300 ft., brick, rein.-con., steel MILL exten. incl. 3 story, 100x200 ft., brick single men's residence, office, 35 houses, RED ROCK, ONT. St. Lawrence Corp. Brampton Pulp & Paper Co. Ltd., Sun Life Bldg., Montreal, Que. E & B Cowan, 5400 Pare St., Montreal, Que., engr. Margison & Babcock & Assoc., Ltd., 21 Richmond St. W., Toronto, Ont., archts. CD 11/5/51.

▲ **Labrador Constr. Co. Ltd.**, 5000 13 Ave., Montreal, Que. CA $1,000,000. rein.-con., brick, stone addn. to COLLEGE for Faculty of Science, ST. LAURENT (P. O. MONTREAL), QUE. Reverend Fathers of the Cross, St. Laurent, Que. Larose & Larose, 1480 Blvd. St. Joseph St., Montreal, Que., archts. CD 4/28/47.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

West African Constructors, Ltd., 70 Pine St., New York, N. Y. U. S. A. CA. $865,565, WW and sewerage sys. for Monrovia, LIBERIA, WEST AFRICA. Dpt. P. Wks. & Utilities Republic of Liberia, West Africa. Hazen & Sawyer, Engineers, 110 E. 42 St., New York 17, N. Y. engrs. CD 4/3.

(Proposal Advertisements see pp. 120 to 122)

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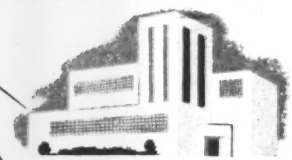

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St. Paul's new uni-flex sub-frame with thrust-equalizing tension bars and equi-lift strut arms assure more strength with less "beef" . . . less strain on truck chassis.

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Class	Model	Wt. lbs.	Payload tons rating at body lengths shown									
			7′	8′	9′	10′	11′	12′	13′	14′	15′	16′
Standard Duty 4 new models	D-16	550	7¼	6								
	H-16	650		9								
	H-18	735			9	8	7					
	H-20	795			11½	10	9	8				
Heavy Duty 5 new models	L-20	870			14	12½	11	10	9			
	L-24	1020				15	13½	12	11	10		
	2H20	1370				20	18	16	14½	13	11½	
	2L20	1555				25	22	20	18	16½	15	13½
	2L24	1695				31	28	25	23	21	19	17

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, **American Bridge Div. U. S. Steel Co.,** 1414 Statler Bldg., Boston, Mass. CA. **$2,939,976.** steel superstructure with concrete deck and bascule draw with open grid deck, Boston and Chelsea. CD 6/26, under LB.

† **Arnold M. Diamond, Inc.,** 50 Court St., Brooklyn, N. Y. LB. **$348,949,** repairing quay wall, Submarine Base, Spec. 34337, NEW LONDON, CONN. P. Wks. Office, Third Naval Dist., 90 Church St., New York 7, N. Y. Bids June 24.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Westover Field Development Corp.,** Hamilton L. Shields, pres., 97A Exchange St., Portland, Me. Owner Builds. Est. **$3,600,000.** 1 story bldgs., 400 HOUSING Units, Westover Field, CHICOPEE FALLS, MASS. Paul E. Atwood, 107 Court St., Bangor, Me., archt. Prentiss & Carlisle Co., Inc., 107 Court St., Bangor, Me., engr. CD 11/30/51.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Sam Braen Constr. Co.,** Brookside Ave., Wyckoff, N. J. CA. **$666,333,** soil erosion and misc. maintenance projects in intransit area, Spec. 34249, EARLE, N. J. P. Wks. Office, Third Naval Dist., 90 Church St., New York 7, N. Y. Bids June 17. CD 6/6.

L. A. Wells Constr. Co., 1121 Schofield Bldg., Cleveland, O. LB **$319,125,** est. $400,000. reconstruct 3,000 ft. rubble mound breakwater protection at Presque Isle Peninsula, Lake Erie, Erie Co., PENNSYLVANIA. State Dpt. Forests & Waters, 402 Education Bldg., Harrisburg, Pa. Bids June 25. CD 6/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Mullan Constr. Corp., 3949 Greenmount Ave., Baltimore, Md. LB **$464,000.** 1 story, concrete, brick, cinder block irregular shape Lake Shore Elementary SCHOOL, ANNAPOLIS, MD. Anne Arundel Co., Bd. Educ., Annapolis, Md. Bids June 27. CD 2/13.

† **John K. Ruff, Inc.,** 100 W. 22 St., Baltimore, Md. LB **$948,037.** rehabilitation of KITCHENS, MESS HALLS, B. O. Q's and HEATING PLANT, Eng. 18-020-52-61, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids June 28. CD 6/19.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **W. C. Spratt,** Fredericksburg, Va., CA. **$438,000** rehabilitation of water sys. at Marine Corps Schools, No 771769, Spec. 33172, QUANTICO, VA. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash. D. C. Bids June 25, awarded June 26. CD 6/16.

† **Victor Beauchamp, Inc.,** 6837 4th St. N. W. Wash. D. C. CA. **$715,553,** grading and construction of 3 rifle ranges and parking area with roads, concrete retaining wall, sewage pumping station, sewage lines, 2 block bldgs. and water lines at Marine Corps School, NOY 73375, Spec. 34501, QUANTICO, VA. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash. D. C. Bids June 24, awarded June 30.

† **H. G. DuPree Co.,** 1125 Kings Ave., Jacksonville, Fla., CA. **$870,718,** central heating plant and steam distr sys. at Charleston Air Base, No. 38-081-52-91, CHARLESTON, S. C. U. S. Eng., Customhouse, Charleston, S. C. CD 7/3 under LB.

† **Reed Constr. Corp.,** 1345 20th St., Miami Beach, Fla. LB **$202,618,** structure 29 for central and southern Florida Control Proj. Inv. 52-82, FLORIDA, U. S. Eng., P. O. Box 4970, Jacksonville, Fla bids June 24. CD 5/23.

† **Crabtree Constr. Co., Inc.,** P.O. Box 8985, West Palm Beach, Fla., CA. **$346,312.** rehabilitation of utilities, Phase IV, Sect. B, Palm Beach International Air Port, Eng 08-23-52-164, WEST PALM BEACH, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids June 20, awarded June 27. CD 6/26, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Bush Constr. Co.,** Flat Iron Bldg., Norfolk, Va., CA. **$1,988,890,** construct, manage, finance APARTMENT units, Inv. 52-38, FORT MONROE, VA. U. S. Eng., foot of Front St., P.O. Box 119, Norfolk, Va. Bids June 10. CD 6/19 under LB.

Redington Constr. Corp., Redington Beach, Fla. Owner Builds. Approx. **$300,000.** APARTMENT units, REDINGTON BEACH, FLA.

Al J. Schneider Co., 3720 7 St., Louisville, Ky. CA **$726,000.** 6 story, WAREHOUSE and OFFICE, LOUISVILLE, KY. Stratton & Terstegge Co., 104 N. 15 St., Louisville, Ky. Bids June 20, awarded June 26. CD 6/27.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ **O., LeRoy**—OFFICE—Bids Asked—**Ohio Farmers Insurance Co.,** Le Roy, home office, on west side of Town Circle, Georgian colonial style with bell tower. $1,250,000. William Jay Davis, 2123 E. 9 St., Cleveland, archt. CD 6/27/51.

BUILDINGS

LOW BIDS AND CONTRACTS

Frank Messer & Son, Paddock Rd., Cincinnati, O., CA. Approx. **$770,000.** 6 story, 184x204x194 ft. concrete, steel, brick open GARAGE, Arch, 3 and Broadway Sts., CINCINNATI, O. Western & Southern Life Insurance Co., 3 St., Cincinnati, O. Hake & Hake, 2400 Gilbert Ave., Cincinnati, O., archts.

DeBartolo Constr. Co., 216 Alexander Ave., Youngstown, O., CA. Approx. **$631,700, 187,590** sq. ft. SHOPPING CENTER, State Rd., 18 store units, CUYAHOGA FALLS, O. State Road Shopping Center, c/o contractor.

Cosmopolitan Housing Corp., Dollar Bank Bldg., Youngstown, O. Owner Builds. **$800,000.** 132 HOMES near North Side Hospital, YOUNGSTOWN, O. CD 3/31/50.

Meadowview Homes, Inc., 22 E. 62 St., Indianapolis, Ind. Owner Builds. Approx. **$350,000.** 30 HOMES in northeast sect., INDIANAPOLIS, IND.

▲† **George Sheaf & Co.,** 449 Neilston St., Columbus 3, O. CA. **$1,900,000,** construct general purpose WAREHOUSE, equip. processing bldg., and central heating plant at CASAD Engineer Depot, NEW HAVEN, IND. U. S. Eng., 520 Merchandise Mart, Chicago 54, Ill. Bids May 29. (Correction—cost). CD 6/30, under CA.

Ragner Benson, Inc., 4744 W. Rice St., Chicago 51, Ill. LB. **$338,678,** 1 story, bsmnt. SCHOOL, North Side, WEST CHICAGO, ILL. School Dist 33, West Chicago, Ill. Perkins & Will, 309 Jackson Blvd., Chicago 6, Ill., consult. archts., Thomas R. Shaver, 53 W. Jackson St., Chicago, Ill., structural engr. W. A. Gavelex, 25 Hamilton St., Elgin, Ill., mech. engr. Bids June 25. CD 6/16.

Evans Constr. Co., 1324 S. MacArthur Blvd., Springfield, Ill., CA. **$454,500,** general constr. 2 groups of RESIDENTIAL UNITS at Lincoln State School and Colony, LINCOLN, ILL. State, Springfield, Ill. Bids May 27, awarded June 9. CD 4/9/45.

▲ **Barton-Malow Co.,** 2631 Woodward St., Detroit, Mich. CA. Approx. **$1,000,000.** brick, steel Couzens Memorial CLINIC UNIT, St. Antoine St., DETROIT, MICH. Children's Hospital of Michigan, 5224 St. Antoine St., Detroit, Mich. Bids June 5. CD 6/2.

Merrill-Threm Co., 20602 Harper St., Detroit, Mich. Owner Builds. **$900,000.** SHOPPING CENTER, incl. stores, parking facilities, Gratiot St., ROSEVILLE, MICH.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **W. A. Lynn Constr. Co.,** 1022 Trust Bldg., Lincoln, Neb. LB **$464,564,** est. $441,261. bank stabilization Hensley Bar, Part I;

Pine Bluff Sand & Gravel Co., Ft. Neb., Pine Bluff, Ark. LB **$481,180,** est. $442,861, Part B of Hensley Bar Proj., CIVENG 03-050-52-75, ARKANSAS. U. S. Eng., 300 Broadway, Little Rock, Ark. CD 6/11.

ARKANSAS—State Hy. Dpt., Little Rock,

T. L. James & Co., Ruston, La. CA **$656,115.** work on Hy. 67, Alicia, Lawrence Co.

Reynolds & William, Tyler, Tex. CA **$93,647.** work on Willmar Montecello Rd., Drew Co.; CA **$282,765,** blacktop on Hy. 67, Gurdon, Clark Co.;

Ben M. Hogan & Co., 1100 Fairview St., Little Rock, Ark. CA **$330,228.** surf. Hy. 67, Bald Knob, White Co.; CA **$246,984.** surf. Gleason, Conway Co.;

Four Brothers, Inc., Sweet Home, Ark. CA **$139,584.** work on Hy. 9, Center Ridge, Conway Co.;

Southeast Constr. Co., Inc., 127½ Main St., Pine Bluff, Ark. CA **$122,553,** work on Hy. 21W, Oak Grove, Carroll Co.;

Bob Dills, Inc., Fort Smith, Ark. CA **$495,912,** complete work on Hy. 64, Alma, Crawford Co.;

Steinberg Constr. Co., 1514½ S. 79 E. Ave., Tulsa, Okla. CA **$137,173.** work on Hy. 26, Murfreesboro, Pike Co.;

Interstate Constr. Co., 127½ Main St., Pine Bluff, Ark., CA **$90,470.** work on Hy. 28, Needmore, Scott Co.;

Olentine & Jones, 19 St. Pike, Little Rock, Ark. CA **$274,217.** work on Hy. 63, Imboden, Lawrence Co. Grand total $2,869,648. Bids June 25. CD 6/17.

† **Charles Moreau Co.,** 4521 N. Santa Fe St., Oklahoma City, Okla., LB. **$323,845,** est. $350,000. rebuild 10 bldgs. for married men's quarters, Noftsger & Lawrence, 2756 N.W. 23 St., Oklahoma City, Okla., archts.;

Builders Constr. Co., Kerr-McGee Bldg., Oklahoma City, Okla., LB. **$155,000,** est. $150,000. rebuild hospital facilities, Spec. 34732;

F. H. Spaulding, 1533 W. Main St., Oklahoma City, Okla., LB. **$74,364,** est. $70,000. rebuild electric

distr. sys. all foregoing at Naval Air Center, NORMAN, OKLA. Dpt. Navy, 8th Naval Dist., Bldg. 16, Naval Station, New Orleans, La. Coston & Frankfurt, 323 E. Madison St., Oklahoma City, Okla., engrs.

Hal C. Dyer, Lone Star Gas Bldg., Dallas, Tex., CA. **$578,119,** est. $1,000,000. 20 m.g. underground rein.-con. water storage reservoir at Walnut Hill Lane and Hillcrest, DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Bids June 24. CD 7/1, under LB.

† **Powell, Samanie & Carruth,** Gatesville, Tex., LB **$308,726,** est. $306,595, two 2 story, 10,000 sq. ft. wood frame bachelor officers quarters bldgs., Wolters Air Force Base, MINERAL WELLS, TEX. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bids June 26. CD 6/5.

† **Heldenfels Bros.,** Box 1917, Corpus Christl, Tex., LB **$63,000,** airfield lighting; LB **$368,885,** runway extens.; LB **$180,544,** taxiway extens., Inv. No. Eng 41-243-32-129, Foster Air Force Base, VICTORIA, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 1/9.

MONTANA—State Hy. Comn., Capitol, Helena,

McKinnon-Decker Constr. Co., Helena, Mont. CA **$231,-997.** 450 ft. steel, concrete bridge on Shelby-south road, Toole Co. Bids June 25. CD 6/18.

WYOMING—State Hy. Comn., State Office Bldg., Cheyenne,

Woodward Constr. Co., Rock Springs, Wyo. CA **$100,-406,** est. $92,645. bit. shoulder tr. 22.496 mi. Lyman-Granger Jct. road, Sweetwater and Uinta Counties;

Boatright-Smith, Rawlins, Wyo. CA **$75,996,** est. $72,-916. oil tr. road mix method 7.2 mi. Bitter Creek Rd., S. P. SC-CFM 3168, Sweetwater Co.;

Kinsely-Moore Co., Douglas, Wyo., CA **$145,925,** est. $128,382. base course surf., plant-mixed surf. course 8.134 mi. Casper-Glenrock Rd., S.P. 3114 and 3115 combination, Natrona and Converse Counties.

Leach Bros., Cheyenne, Wyo. CA **$176,278,** est. $185,-248. selected materials surf. 2 treated timber bridges 5.2141 mi. Upton-Hay Creek Rd., S 80 (2), Weston Co.;

Taggart Constr. Co., Cody, Wyo. CA **$265,677,** est. $243,549. grading curb and gutter work base course surf., plant mix surf. 2.108 mi. Cody ST., 48 in. rein.-con. siphon on Cody-Greybull Rd., F 103 (6), F 129 (3), F 63 (3) and 3148 combination, Park Co.;

Road Constr. Co., 706 W. 19 St., Cheyenne, Wyo. CA **$264,844,** est. $246,270. base course surf. plant mixed surf. 7.167 mi. Cheyenne-Pine Bluffs Rd. and 0.191 mi. near Intersection of Ninth and Dunn Ave., F FI 138 (16), UGI 230 (2) Unit II comb., Laramie Co.;

Albert M. Conrad, Big Piney, Wyo. CA **$72,399,** est. $78,516. grading, draining 4.285 mi. Big Piney-East Rd., S 73 (3), Sublette Co.;

Jones-Hinkley & Jones, Inc., Powell, Wyo. CA **$121,302,** est. $114,759, grading, draining 4.613 mi. Douglas-Cold Springs Rd., S 49 (6), Converse Co. Grand total $1,150,428. Bids June 26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Ring Constr. Co.,** Metropolitan Bldg., Minneapolis, Minn., and **Orville E. Madson,** Sexton Bldg., Minneapolis, Minn. LB. **$1,032,800.** rehabilitation, addns. to BUILDING 503, Twin Cities Arsenal, Eng. 52-122, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 27. CD 6/18.

▲† **Steenberg Constr. Co.,** 1371 Marshall Ave., St. Paul, Minn. LB. **$819,839,** WAREHOUSE, appurtenances, Inv. 52-123;

Fleisher Engineering & Constr. Co., Builders Exchange Bldg., Minneapolis, Minn., LB **$581,567,** MANUFACTURING BLDG., appurtenances, Twin Cities Arsenal, Inv. 52-124, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 27. CD 6/12.

† **Hagstrom Constr. Co.,** 1567 Selby Ave., St. Paul, Minn. LB. **$629,700.** rehabilitation, addns. to BUILDING 102, Twin Cities Arsenal, Inv. 52-120, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 25. CD 6/17.

† **Hagstrom Constr. Co.,** 1567 Selby Ave., St. Paul, Minn. LB. **$863,986.** rehabilitation, addns. to BUILDING 576, Twin Cities Arsenal, Inv. 52-121, MINNEAPOLIS, MINN. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 26. CD 6/18.

▲ **Clay County Development Co.,** R.F.D. 13, Kansas City, Mo. Owner Builds. **$4,000,000.** 44 DWELLINGS, LIBERTY, MO.

▲ **Kaiser Engineers,** 1924 Broadway, Oakland, Calif., CA. Approx. **$2,350,000.** Design and construct 19,000 bbl. capacity Houdriflow catalytic cracking unit, incl. 350 ft. cracking tower, TEXAS CITY, TEX. Texas City Refining, Inc., Texas City, Tex. CD 6/20.

† **C. H. Leavell & Co.,** 1900 Wyoming St., El Paso, Tex. LB. **$316,544.** MISSILE ASSEMBLY BLDG. No. 4 for White Sands Proving Ground, Serial No. Eng. 29-005-52-33, LAS CRUCES, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids June 20.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., CA. $2,552,500. 1.5 mi. grading, c. conc. pavement, plant mix surf. and construct separation

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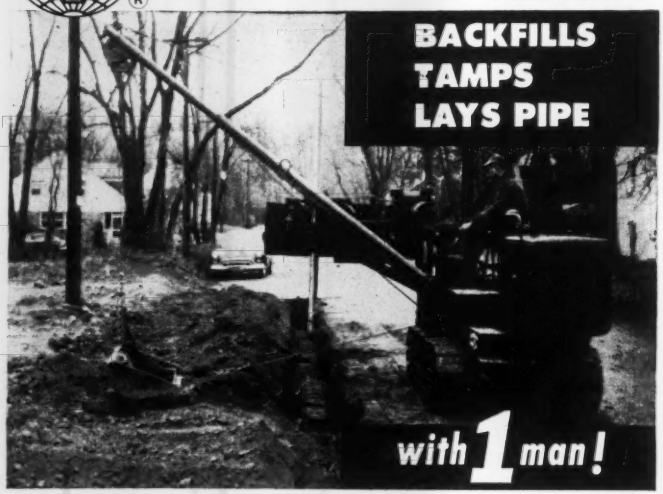

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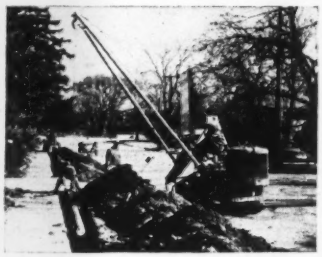

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U. S. POSSESSIONS

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Satchwell & Joseph Electric Co.**, 1316 San Marco Blvd., Jacksonville, Fla., LB. **$194,950,** expansion of power facilities at Ramey Air Force Base, Inv. 52-152, AGUADILLA, PUERTO RICO, U. S. Eng., P.O. Box 4970, Jacksonville 1, Fla. CD 4/28.

CANADA

BIDS ASKED—BUILDINGS

▲ **Sask., Saskatoon**—HOSPITAL—B.A. 7/28—Saskatoon City Hospital, A. Esson, supt., Saskatoon, 5 story, hospital addn., $2,000,000. Govan, Ferguson, Lindsay, Kaminker, Maw, Langley & Keenleyside, 515 Jarvis St., Toronto, Ont., and Frank Martin, Metropolitan Bldg., Saskatoon, archts. H. H. Angus & Assoc. Ltd., Northern Hardware Bldg., Edmonton, Alta., engrs. CD 11/20/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

W. C. Wells Constr. Co. Ltd., 140 Ave. F, Saskatoon, Sask. CA **$397,890.** supply and installation underground steam sys., at R. C. A. F. Station, SASKATOON, SASK. Dpt. National Defence, Cartiers Sq., Ottawa, Ont. Bids Apr. 17. CD 4/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Foundation Co. of Canada Ltd.**, 1900 Sherbrooke St. W., Montreal, Que. CA approx. **$1,300,000,** 1 story, 67 ft. high, 240x750 ft. rein.-con. ASSEMBLY PLANT, Montee St. Laurent St., MONTREAL, QUE. Canadair Ltd., Cartierville, Que. H. E. Egbert, c/o owner, engr.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **New Zealand**—Ministry of P. Wks., P.O. Box 8015, Govt. Bldg., Wellington, received tenders June 24 from the following firms for civil engineering and contracting services to complete the construction of the Roxburgh Hydro Electric Power Proj., including dam, spillway, power house and associated works;
The Cementation Co., 39 Victoria St., London, S.W. 1, England;
Holland, Hannen & Cubbitts, Ltd., 1 Queens Anne's Gate, London, S.W. 1, England;
George Wimpey Co., 23 Hammerscourt Grove, London W 6, England;
Utah Constr. Co., 1 Montgomery St., San Francisco 4, Calif., U. S. A.; **Taylor Woodrow Constr. Co., Ltd.**, Whitehall Rd., London E 4, England;
Guy F. Atkinson Co., 10 W. Orange St., South San Francisco, Calif., U. S. A.; **W. E. Kier Constr. Co.**, Spreckel Bldg., San Diego 1, Calif., U. S. A.;
Fletcher Constr. Co., Ltd., Hutt Rd., Kaiwarra, Wellington, New Zealand; **Raymond Concrete Pile Co.**, 140 Cedar St., New York 6, N. Y. and **Merritt-Chapman & Scott Corp.**, 17 Battery Pl., New York 4, N. Y.;
Morrison-Knudsen (New Zealand, Ltd.) P.O. Box 1184, Wellington, New Zealand; **Pacific Bridge Co.**, 333 Kearney St., San Francisco 8, Calif., U. S. A. and the **Downer Constr. Co., Ltd.**, 88-96 Custom House, Wellington, New Zealand;
Wilkins & Davies Constr. Co. Ltd., 19 Hutt Rd., Lower Hutt, Wellington, New Zealand;
Williams Constr. Co., 175-187 Montreal St., Christchurch, New Zealand; and **Hornibrook Constr. Co.**, 2 St. George's Crescent, Drumoynes, Sydney, New South Wales. CD 3/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **The Lummus Co.**, 385 Madison Ave., New York 17, N. Y. CA. Approx. **$35,000,000.** 25 bbl. daily REFINERY, BOMBAY, INDIA. Standard-Vacuum Oil Co., 26 Broadway, New York 4, N. Y. CD 10/11/51.

Proposed Projects——

WATER SUPPLY

▲ **La., Houma**—Waterworks Dist. 1 of Terrebonne Parish, Court House, voted **$2,015,000** bonds, WW sys.
▲ **Neb., Lincoln**—City, City Hall, water sys. imprvs., incl. 20 mi. supply line from Ashland to Lincoln, **$4,000,000.** D. L. Erickson, city engr. CD 1/11.
▲ **O., Toledo**—City, City Hall, water line under Maumee River from Collins Park pumping station, 72 in. diam. **$1,000,000.** Jones, Henry & Schoonmaker, Security Bldg., consult. engrs. George VanDorp, city water comr. CD 10/24.
Okla., Oklahoma City—City, City Hall, 5,000 ft. 30 in. c.i. pipe from Lake Hefner to Lake Overholser, **$220,000.** M. B. Cunningham, c/o owner, city engr. CD 5/15/50.

(Continued on page 142)

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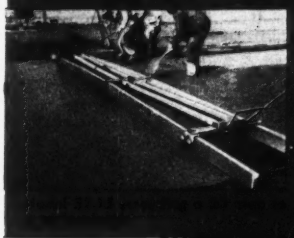

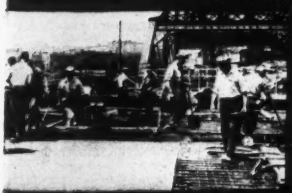

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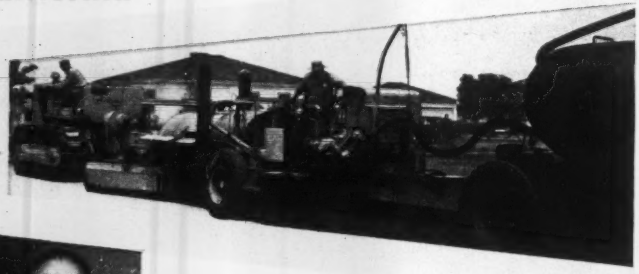

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(Continued from page 140)

S. C., Sumpter-City, WW imprvs. $400,000. Wm. C. Olsen, 5 Exchange Pl., Raleigh, consult. engr.

▲ **Tex., Irving**—City, voted bonds June 14, supply wells, $100,000; steel elevated water storage tank, $150,000; rehabilitation and replacement undersized water mains, $485,000; new c.i. mains and water distr. mains, $725,000. Koch & Fowler, 3900 Lemmon St., Dallas, consult. engrs. CD 5/28.

SEWERS, WASTE DISPOSAL

▲ **Ark., Hot Springs**—City, Hot Springs, defeated $1,590,000 bonds June 26, imprv. sewerage sys. CD 6/17.

▲ **Mo., Kansas City**—City, c/o City Mgr. and City Council, City Hall, bond election Aug. 5, storm and sanitary sewers, $9,000,000; sewer imprvs., $3,000,000; trunk line sewers, $3,400,000. CD 4/10.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Coombs Creek sanitary sewers, $250,000, Forest & Cotton, Praetorian Bldg., consult. engrs. CD 5/8.

▲ **Tex., Houston**—Harris Sewage Disposal Dist., c/o Comrs. Court, and c/o Frank J. Metyko, engr., 608 Scanlan Bldg., master sewage disposal unit tentatively on Atkinson Island, $15,000,000; giant sys. of sewage conduits to carry all sewage from city and county to a master disposal plant, $25,000,000.

Tex., Irving—City, voted bonds June 14, new sanitary sewer collection lines, $303,890; sewage treatment plant, $87,110; sanitary sewerage sys. rehabilitation, $175,000. Koch & Fowler, 3900 Lemmon St., Dallas, consult. engrs. CD 5/28.

▲ **Utah, Salt Lake City**—Salt Lake City Corp., c/o Irma Bitner, recdr, City and County Bldg., storm sewer to carry Parleys Creek water through city to Jordan River. $1,500,000. Roy McLeese, c/o owner, city engr. CD 11/1/45.

Va., Suffolk—City, City Hall, sewage treatment plant and interceptor lines. $750,000. Myron Sturgeon Engineers, 2124 Kimball Terrace, Norfolk, consult. engrs. E. N. Wilkinson, city mgr. CD 8/10/50.

Va., Waynesboro—City, City Hall, sewage treatment plant. $400,000. Myron Sturgeon Engineers, 2124 Kimball Terrace, Norfolk, consult. engrs. W. T. Wells, city mgr. CD 7/30/45.

† **Alaska, Ketchikan**—Alaska P. Wks., Dpt. Interior, Juneau, sewers, $600,000. CD 2/28/50.

BRIDGES

▲ **Kan., Westmoreland**—Pottawatamie Co., Westmoreland, and Wabaunsee Co., Alma, $250,000 bond election Aug. 5 at each county seat, bridge over Kaw River between St. Mary's and Belvue. $1,000,000. CD 12/3/51.

▲ **N. Y., Ogdensburg and Ont.,** Prescott-Ogdensburg Bridge Auth., c/o Geo. Tulford, Brockville, Ont. international bridge across the St. Lawrence River between Ogdensburg, N. Y. and Prescott, Ont. $12,000,000.

STREETS AND ROADS

▲ **NEW YORK**—New York State Dpt. P. Wks., Albany, Warren Co.—8.9 mi. in and around Glens Falls. $4,603,500.

† **Okla., McAlester**—Dpt. Navy, Bldg. 16, Naval Station, New Orleans, La., road constr. at Naval Ammunition Depot, $693,000. Rex Collins, McAlester, consult. engr. CD 6/27, under Public Buildings.

Tex., Irving—City, voted bonds June 14, street imprvs. paving $350,000. Koch & Fowler, 3900 Lemmon St., Dallas, consult. engrs. CD 5/28.

Wash., Seattle—City, County-City Bldg., Zone 4, grading, paving Empire Way Extension between Rainier Ave. and Dearborn St. $300,000. R. W. Finke, city engr.

▲ **Alaska, Anchorage**—City, City Hall, defeated bonds June 10 paving 187 blocks of streets, $3,000,000. CD 5/29.

EARTHWORK, WATERWAYS

Wis., Sheboygan—City, will not construct shore protection, $200,000. Project abandoned. CD 5/2.

B. C., Inverness—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging Approx. $400,000. R. Blais, c/o owner, engr.

▲ **Ont., London**—Thames Valley Conservation Auth., Dr. J. Cameron Wilson, chn., 274 Huron St., 64 ft. concrete dam at Glengowan, $2,020,000; 50 ft. dam at Wildwood, $1,407,000, channel imprvs., $135,000. CD 11/13/46.

AIRPORTS

Mich., Detroit—LANDING STRIPS—Wayne Co. Bd. Rd. Comrs., John P. O'Hara, chn., wild'n. landing strips Detroit-Wayne Major Airport, $660,000, Leroy Smith, 1900 Cadillac Tower, engr. CD 8/29/51.

Mich., Pontiac—AIRPORT—City, City Comn., expansion municipal airport, constr. 4,200 ft. runway

$200,000, Homer D. Hoskins, Municipal Airport, staff engr. CD 1/30/46.

▲† **Mo., Grandview**—HEADQUARTERS—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., Continental Air Command Headquarters, $6,000,000. CD 1/15.

▲ **Mo., Kansas City**—AIRPORT—City, c/o City Council, City Hall, bond election Aug. 5, overhaul bases air lines, facilities industrial airport, $20,000,000; industrial airport, $3,000,000. CD 4/10.

† **Okla., Camp Gruber**—BARRACKS—U. S. Eng., Box 61, Tulsa, Zone 1, rebuild barracks. $600,000. CD 6/27/51.

▲† **Okla., Camp Gruber**—COLD STORAGE, etc.—U. S. Eng., Box 61, Tulsa, Zone 1, cold storage plant. $400,000; roads, streets to be rebuilt, $1,500,000. CD 6/27/51.

LATIN AMERICA

Mexico, Azcapotzalco—Proctor & Gamble de Mexico, Czda. de Guadalupe, 233, Mexico City, plans disintegators factory. $300,000.

Mexico, Zacatepec—Ingenio Emiliano Zapata, Eugenio Prado, genl. mgr., plans bagase paper factory. $400,000.

PUBLIC BUILDINGS

▲ **Calif., El Cerrito**—HOSPITAL—Albany Hospital, Inc., Leon Jaris, bus. mgr., Marin and Masonic Aves., Albany, plans by Russell D. de Lappe & Mitchell Van Bourg, Claremont Hotel, Berkeley, 125-bed hospital at Lexington Ave. near Fairmont Ave. $1,000,000. CD 7/31/51.

▲ **Calif., Nevada City**—SCHOOL—Nevada Co., Walter A. Carlson, co. supt. Schools, Court House, $1,000,000, bond election Sept. 23, Nevada County Union High School.

▲ **Calif., Redwood City**—SCHOOL—Redwood City Elementary School Dist., Andrew Spinas, supt., James and Duanes Sts., Selby Lane School addns. $1,400,000. Arthur D. Janssen, 1616 El Camino Real, Menlo Park, archt. CD 5/27.

Conn., Waterbury—SCHOOL—Bd. Educ., 271 E. Main St., plans by Francis L. S. Mayers, 126 Bedford St., Stamford, brick, steel, concrete school, Bucks Hill Sect. $600,000. CD 1/6/50.

Ga., Douglas—DORMITORY and CLASSROOM—Bd. Regents University Sys. of Georgia, 20 Ivy St. S. E. Atlanta, plans by Abreu & Robeson, 141 Walton St. N. W., Atlanta, mens dormitory, $400,000; classroom bldg. $375,000.

▲ **Ga., Savannah**—DORMITORY, etc.—Bd. Regents University System of Georgia, 20 Ivy St. S. E. Atlanta, plans by Bergen & Bergen, 127 Habersham St., mens dormitory, $400,000; plans by Aeck & Assoc., 140 Peachtree St. N. W., Atlanta, physical educ. bldg. $350,000; heating plant, $100,000, Donald F. Lindstrom, 800 Peachtree Bldg., Atlanta, consult. engr., all foregoing work at Savannah State College.

▲ **Ga., Tifton**—DORMITORY, etc.—Bd. Regents University System of Georgia, 20 Ivy St. S. E., Atlanta, plans by C. W. Folwood, Tifton, womens dormitory, $400,000; plans by Toombs & Co., 127 Walton St. N. W., Atlanta, science bldg. $300,000 at Abraham Baldwin Agricultural College; plans by Francis M. Daves & Assoc., 57 8th St. N. E., Atlanta, laboratory at Coastal Plain Experiment Station, $75,000. CD 11/22/46.

Ga., Valdosta—PHYSICAL EDUCATION, etc.—Bd. Regents, University System of Georgia, 20 Ivy St. S. E. Atlanta, plans by Logan & Williams, 321 Palmer Bldg., Atlanta, physical educ. bldg. $300,000; mens dormitory, $400,000 at Valdosta State College. CD 7/23.

▲ **Ill., Springfield**—OFFICE—State Hy. Dpt., Springfield, plans by Hadley & Worthington, Mers Bldg., state highway office bldg., and service headquarters, $2,000,000.

Ind., Gary—SCHOOL—Bd. School Trustees, 524 Garfield St., plans by Beine, Hall & Curran, 607 Broadway, 2 story school, 21 and Mississippi Sts., $500,000. Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., advisory archt.

Mass., Billerica—SCHOOL——Town, R. Myron Davis, chn. School Bldg. Comn., Boston Rd., plans by Thomas Hixon, 1150 Commonwealth Ave., Allston, 2 story, 134x249 ft. school, Parker St., $550,000.

▲ **Mass., Sturbridge**—SCHOOL—Towns of Sturbridge, Brookfield, Brimfield, Wales and Holland, Ttantasqua Regional School Bldg. Comn., Sturbridge, plans by Anderson & Nichols, engrs. and archts., 53 State St., Boston, Ttantasqua Regional School, $1,000,000. CD 9/28/51.

▲ **Mich., Ecorse**—SCHOOL—Ecorse School Bd., Irvin Friend, chn., plans by Bennett & Straight, 15624 Michigan Ave., Dearborn, 2 story, bsmnt., brick, steel, concrete, high school, $1,650,000. CD 4/8.

Minn., Hastings—SCHOOL—Bd. Educ., plans by Magney, Tusler & Setter, 303 Foshay Tower, Minneapolis, school, $800,000. CD 4/9.

Mo., St. Louis—SCHOOL—Bd. Educ., V. Harry Rhodes, comr. School Bldgs., 911 Locust St., Zone 1, 2 elementary schools, area bounded by Jefferson Cass and Franklin Aves. and 18 St. vicinity of proposed Pruitt Housing Proj. $600,000. CD 6/11/51.

▲ **N. Y., Elmhurst**—SCHOOL—Bd. Educ., 49 Flatbush Ave. exten. Brooklyn, Zone 1, P. S. 13 addn., 94 St. and 55 Ave., Proj. E-441. $1,000,000. CD 10/15/48.

O., Maple Heights—SCHOOLS—Bd. Educ., Maple Heights, bond election Aug. 12, school addn. and site development and equip. for high school. $650,000.

▲ **S. C., Charleston**—DORMITORY—Medical College of South Carolina, Charleston, plans by Hopkins, Baker & Gill, Florence, dormitory, $1,000,000. E. G. Dotterer, 12 Exchange St., consult. engr. CD 6/29/50.

▲ **Tex., Aldine**—SCHOOLS—Aldine Independent School Dist., Aldine-Westfield Rd., bond election July 1, Negro Intermediary School, Humble Rd. and Halls Bayou area, $300,000; 2nd Intermediary School, in Blue Bell area, $300,000; school remodeling and addn. for Whites, $300,000; school remodeling and addns. for Negroes, $300,000; Senior High School for Negroes, $300,000; High School for Whites, $500,000. Kiefner & Werling, 3501 Buffalo Dr., Houston, archts. CD 5/5.

† **Tex., Fort Worth**—SHOP—U. S. Eng., 100 W. Vickery St., Fort Worth, depot shop, for Fort Worth Quartermaster Depot. $900,000.

Tex., Longview—AUDITORIUM—City and Longview Independent School Dist., Longview, plans by Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, 2,500 seating capacity, civic auditorium, 1 block east of present high school. $500,000.

▲† **Tex., McGregor**—PLANT BLDGS., etc.—U. S. Eng., 100 W. Vickery St., Fort Worth, plant (proper) bldg. $3,000,000; misc. constr. $1,000,000; water sys., $75,000; sanitary sewers, $65,000; open and closed drainage, $85,000; roads and plant area paving, $125,000; natural gas sys., $75,000; field and area lighting, $80,000; barracks or housing for plant personnel, $750,000; shops, $450,000; storage or warehouse, $1,000,000; operational and administrative, $35,000, for reactivation Bluebonnet Ordnance Plant, near here.

Va., Eastville—HIGH SCHOOL—Northampton Co. School Bd., Eastville, plans by Rudolph, Cooke & Van Leeuwen, Inc., 355 Monticello Arcade, Norfolk, brick, concrete, masonry high school. $550,000.

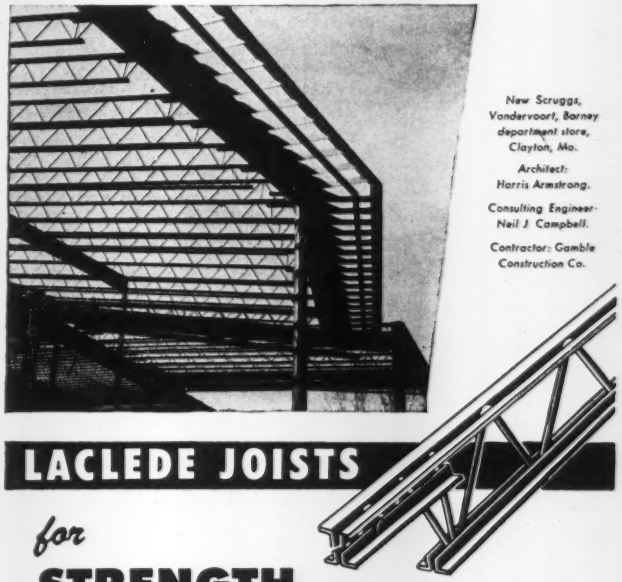
▲† **Va., Norfolk**—SHOPS, etc.—Dpt. Navy, 5th Naval Dist., U. S. Naval Base, Norfolk, automotive repair shops and heavy equip. shop, concrete constr. $2,000,000.

Va., Norfolk—SCHOOL—Norfolk School Bd., Bank and Charlotte Sts., plans by J. B. Courtney, 424 W. 21 St., and Oliver & Smith, 409 Yarmouth St., 1 story, brick, concrete masonry Chesterfield Heights Elementary School, $650,000. J. J. Brewbacker, c/o owner, Supt. Schools.

▲† **Va., Portsmouth**—ELECTRONICS—Dpt. Navy, Fifth Naval Dist., U. S. Naval Base, Norfolk, 4 and 6 story, 170x456 ft. rein.-con. frame electronics bldg. cast-in-place concrete piles, piles and fdn. work. $6,500,000. Harley, Ellington & Day, 153 E. Elizabeth St., Detroit, Mich., and Hayes, Seay, Mattern & Mattern, 118-A Campbell Ave. S.W. Roanoke, consult. engrs.

▲ **Va., Princess Anne**—HIGH SCHOOL—Princess Anne Co. School Bd., Princess Anne, voted bonds 2 story, brick, concrete masonry Central High School, at

(Continued on page 147)



New Scruggs, Vandervoort, Barney department store, Clayton, Mo.

Architect: Harris Armstrong.

Consulting Engineer: Neil J Campbell.

Contractor: Gamble Construction Co.

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The BIG RED TEAM

Two Big-Capacity Scrapers work with the TD-24: The B-170A with 16-yd. struck capacity is the biggest of scrapers for loading without pusher help. The 22-yd. (struck) B-250 is the largest scraper in current production.

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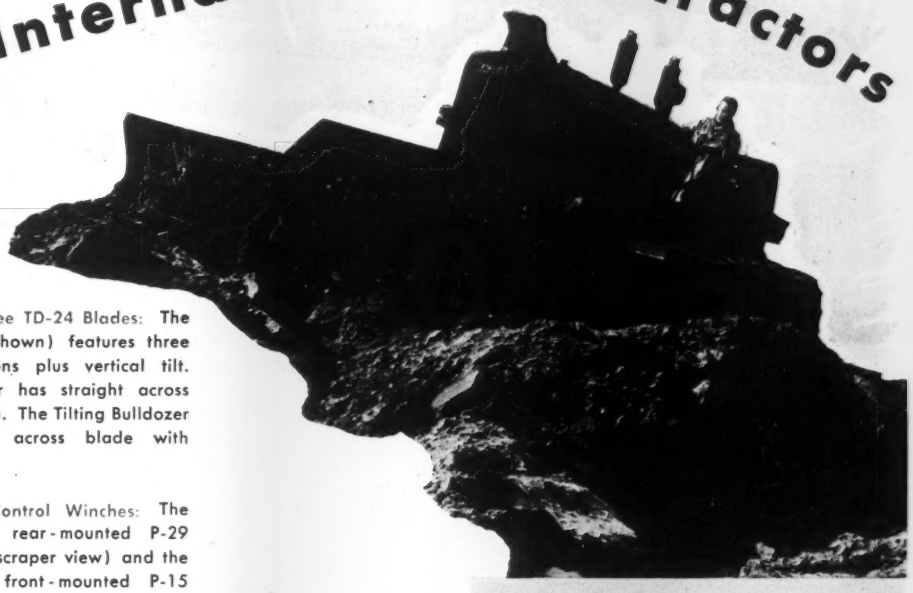

Choice of Three TD-24 Blades: The Bullgrader (shown) features three blade positions plus vertical tilt. The Bulldozer has straight across blade position. The Tilting Bulldozer has straight across blade with vertical tilt.

Two Power Control Winches: The double-drum rear-mounted P-29 (seen in the scraper view) and the single-drum front-mounted P-15 (shown with the Bullgrader).

The CR-4 Ripper is designed to withstand the power of two TD-24's — one pulling and one pushing.

12T52C

Four Pusher Plates: One mounts directly on tractor frame (shown here). Others mount on Bullgrader frame, Bullgrader blade or Bulldozer blade.

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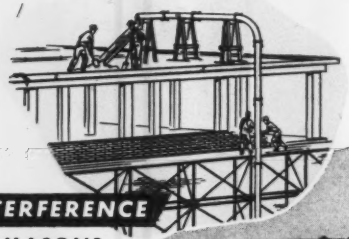
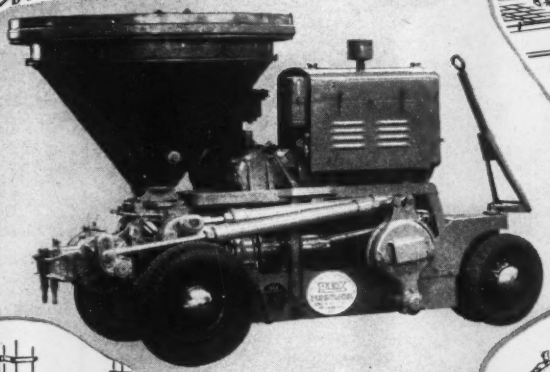


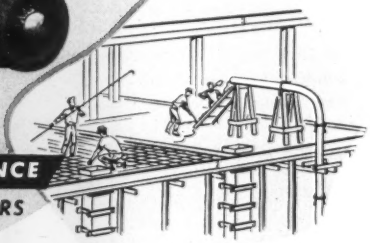
NO INTERFERENCE WITH MASONS

NO INTERFERENCE WITH PLUMBERS



NO INTERFERENCE WITH CARPENTERS

NO INTERFERENCE WITH ROD BUSTERS



So don't be penalized by the high cost of interference *on any job* . . . interference that means dollars out of your pocket. Investigate the savings of concrete by pipe line today. Get the details from your local Rex distributor, or write to Chain Belt Company, 4633 W. Greenfield Avenue, Milwaukee 1, Wisconsin.

No delays waiting for various trades to finish up.

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Move placing equipment from floor to floor in 15 minutes! Just extend the pipe.

Eliminate trestling, scaffolding, towers and other expensive preparatory costs.

No cleanup problems.

Place all the concrete *where* you want it, when you want it, in a smooth, steady flow.

CHAIN BELT REX COMPANY®

CONSTRUCTION MACHINERY . . .

(Continued from page 143)

Thalia, near Virginia Beach. $2,500,000. Oliver & Smith, 409 Yarmouth St., Norfolk, archts. CD 4/24.

▲ Wash., Richland—FACILITIES—Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash. 25, D. C., facilities at Hanford Works. $346,000,000.

Wash., Seattle—SCHOOLS—Highline School Dist. 401, 253 S. 152 St., school in Normandy Park, $350,000. Junior High School, $900,000. CD 6/28.

Wash., Seattle—SCHOOL—Shoreline School Dist. 412, N. 137 and Roosevelt Way, Olympic Hill Elementary School, $500,000. CD 9/11/45.

▲ Wis., Milwaukee—SCHOOL—Bd. School Directors, 1111 N. 10 St., Zone 3, plans by Grassold & Johnson, 734 N. Jefferson St., Northwest Senior High School, $4,000,000, S. J. Sutherland, c/o owner, archt. CD 1/18/45.

Wyo., Douglas—SCHOOL—Douglas High School Dist., voted $600,000 bond June 24, Junior-Senior High School. CD 6/6.

▲ Alaska, Anchorage—HIGH SCHOOL—School Bd., Anchorage, defeated sales tax June 10, high school. $4,000,000. Manley & Mayer, Anchorage, archts. CD 5/29.

▲† Alaska, Fairbanks—HIGH SCHOOL—Alaska P. Wks., Dpt. Interior, Juneau, high school, $2,385,600.

COMMERCIAL BUILDINGS

Fla., Miami—OFFICE—Ainsley Corp., Townley Bldg., plans by Morris Lapidus, 256 E. 49 St., New York, N. Y., office. Approx. $750,000.

Ga., Atlanta—HOTEL—O. T. Bell, c/o Summer-Locatell Co., archt., 684 W. Peachtree St., Negro Hotel, $500,000. CD 10/17.

▲ Ill., Chicago—HIGH SCHOOL—Lutheran High School Assoc., 77 W. Washington St., Zone 2, plans by Perkins & Will, 309 Jackson Blvd., Zone 6, 3 story, bsmnt. high school. $1,500,000.

▲ La., Lafayette—OFFICE—Maurice Heymann, Lafayette, office. $1,500,000.

▲ Mich., Lansing—SHOPPING CENTER—Francis J. Corr, Inc., 1120 May St., brick shopping center, incl. 30 or more stores on 50 acre site, parking facilities, E. Michigan Ave., Glenmore Golf Course, $2,000,000.

N. Y., Brooklyn — APARTMENT — Marine Co-operative Apartments, Inc., 6202 Avenue U, Zone 10, plans by Seelig & Finkelstein, 153 Pierrepont St., Zone 2, 6 story apartment, 2239 Troy Ave. $588,000.

N. Y., Jamaica—APARTMENT—Rosedale Gardens, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, 6 story apartment, Wexford Terrace, west of Midland Parkway. $500,000.

▲ Pa., Phila.—FOOD DEPT. STORE—Jefferson Life Insurance Co., c/o Baltimore Markets, Inc., lessee, 22 and Walnut Sts., food department store, 9 St. and Girard Ave. $1,000,000.

▲ Tex., Fort Worth—SHOPPING CENTER—Edgewood Building Corp., 4700 Blk E. Lancaster St., shopping center. $1,000,000.

Tex., Houston—CHAPEL—First Baptist Church, 1020 Lamar St., plans by J. W. Dehnert, 3815 Garrott St., 3 story addn. to educational bldg., chapel remodeling existing bldg., air-conditioning. $750,000.

▲ Tex., Houston—DWELLINGS—Bob and Buck King, 4112 Dennis St., Proj. 1, 60 dwellings, $450,000; Proj. 2, 75 frame dwellings, $525,000; Proj. 3, 100 frame dwellings, asb. siding, $700,000; Proj. 5, 70 frame dwellings, concrete slab fdn., $490,000; Proj. 4, 90 frame dwellings, concrete slab fdn. $630,000; Proj. 5, 85 dwellings, $595,000; Proj. 6, 55 frame masonry trim dwellings, concrete slab fdn. $385,000; Proj. 7, 67 dwellings, $455,000. In portion "Langwood Addition" off Hempstead and Lang Rds.

Tex., Temple—CLINICAL RESEARCH, etc.—Scott & White Memorial Hospital, Temple, plans by Wyatt C. Hedrick, engrs.-archts., 1005 First Natl. Bank Bldg., Fort Worth, 10 story clinical research, $4,100,000; educational bldg., $740,000; scientific museum bldg., $650,000; doctors quarters and nurses quarters, $850,000. CD 11/26/51.

▲ Tex., West Columbia—DWELLINGS—Columbia Development Co., c/o V. L. Evans, 1603 S. Post Oak Lane, Houston, Unit 1, 40 frame dwellings, $300,000; Unit 2, 60 frame dwellings, concrete slab fdn. $425,000; Unit 3, 50 frame dwellings, concrete slab fdn., $365,000; Unit 4, 45 frame dwellings, concrete slab fdn. $325,000; Unit 5, misc. housing units, concrete slab fdn. $300,000.

Wash., Seattle—HOUSES—D. B. Harmon Co., 15846 33 Ave. N.E., forty-five 1,050 sq. ft. frame houses, N. 185 St. and Fremont Ave. $550,000.

Wash., Seattle—BLDG. ALTERATIONS—Y. M. C. A., 5 and Spring Sts., Zone 1, plans by R. L. Durham & Assocs., 1100 Denny Way, Y. W. C. A. Bldg., alterations $800,000. CD 12/7/50.

▲ Ont., Dundas—HOMES—Kenneth D. Soble, 18 Forsythe Ave. N., Hamilton, 500 houses in Governor's Rd.. $5,000,000.

▲ Ont., Toronto—HOMES—Don Mills Development Co., c/o John Layng, archt. 170 Bloor St. W., 1,800 to 2,000 homes in Don Valley, $20,000,000.

INDUSTRIAL BUILDINGS

▲ Ala., Birmingham—MILL—Cosby-Hodges Milling Co., 1501 1st Ave. S., mill. $1,000,000. Paul Berg, Decatur, Ill., consult. engr. CD 6/20.

Fla., Sanford—PLANT—Packard-Bell Co., Sanford, plant addn. $500,000.

▲ Ill., Chicago—STEEL PROCESSING WORKS—Caine Steel Co., 1820 N. Central St., steel processing works, Grand Ave. and Long St. $1,500,000. Bruce A. Gordon Co., 1 N. LaSalle St., Zone 2, consult. engr.

▲ O., Canton—FACTORY—Ford Motor Co., Georgetown Rd. N. E. factory addn. to forging plant, Georgetown Rd. N. E. $4,000,000.

▲ Pa., Erie—FOUNDRY—General Electric Corp., River Rd., Schenectady, N. Y., expand foundry. $10,000,000. CD 7/26/48.

▲ Tex., Beaumont—PLANT—Magnolia Petroleum Co., South Beaumont, some remodeling and expansion of gasoline and oil products units. $2,495,200.

▲ Tex., Hurst—FACTORY—Hydro-Aire, Inc., c/o H. H. Rhoads, pres., Ontario and Winona Aves., Burbank, Calif., masonry factory, near here. $1,500,000. Location changed. CD 2/28, under Tex., Fort Worth.

Tex., LaPorte—WAREHOUSE—J. Emil Anderson & Son, 1809 Balmoral Ave., Chicago, Ill., warehouse, $550,000.

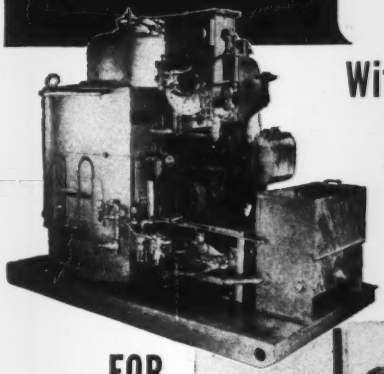
▲ Wash., Bellevue—WAREHOUSE—Safeway Stores, Inc., Seattle Div., 1260 4 Ave. S., 505,000 sq. ft. WAREHOUSE, $1,000,000.

▲ Philippine Islands, Manila—REFINERY—Caltex Oil Co., 551 5th Ave., New York, N. Y., 13,000 bbl. refinery, near here. $30,000,000.

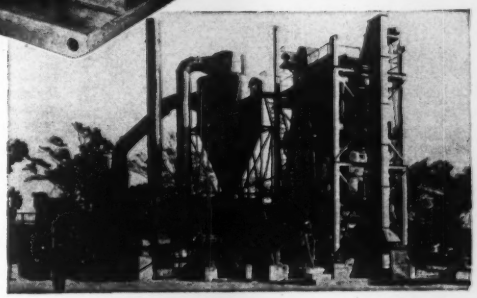
Ont., Ottawa—LABORATORY—Eldorado Mining & Refining Co., Port Hope, isotope laboratory for research and development work on isotopes from Chalk River atomic plant. $600,000.

GET STEAM FROM A COLD START IN 2 MINUTES

With a LITTLEFORD "Kwik-Steam" VAPOR-CLARKSON GENERATOR



FOR ASPHALT PLANTS



This complete package of steam is small, compact and fast when it comes to producing steam for Asphalt Plants. Steam in 2 minutes time from a cold start is what this "Kwik-Steam" Generator will produce. There is ample supply of steam to heat asphalt sufficiently to unload tank cars, to heat asphalt storage tanks, to heat rotary dryers, to open large ram doors at the bottom of pug mixing mill, to operate steam pump and keep materials in pug mill at right mixing temperatures. These are a few of the applications found practical and economical wherever high pressure steam is needed at Asphalt Plants. "Kwik-Steam" Generators are made in sizes from 20 to 165 BHP. Saves at least 50% in fuel and labor in operation. Send for bulletin on Asphalt Plants.

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▲ Ind., Indianapolis—TELEVISION STATION—Universal Broadcasting Co., 1440 N. Meridian St., television station of 316,000 watts radiated power and tower and transmitter with 1,000 ft. antenna, Post Rd. south of Washington St. $1,000,000.

Nebraska—RURAL DISTRIBUTION LINES—Niobrara Valley Electric Membership Corp., O'Neill, 519 mi. rural distr. lines, Holt, Boyd, Knox and Garfield Counties. $625,000. Henningson, Durham & Richardson, Standard Oil Bldg., Omaha, consult. engrs. CD 4/5/49.

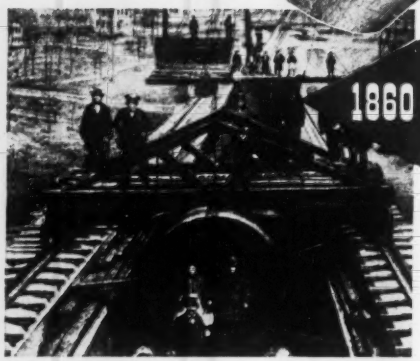
South Carolina—RURAL DISTRIBUTION LINES—Aiken Electric Co-operative, Aiken, 250 mi. rural distr. line and sys. imprvs., Aiken Co. $770,000.

Texas—RURAL DISTRIBUTION LINES—West Texas Electric Co-operative, Hereford, rural distr. lines, sys. imprvs. Deaf Smith Co. $357,000. CD 12/13/48.

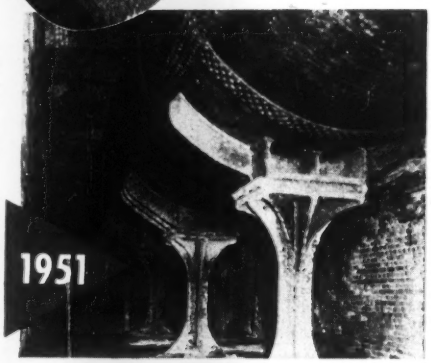
Tex., Flatonia—TELEPHONE SYSTEM—Colorado Valley Electric Co-operative, Flatonia, above-ground pole line rural telephone sys., $450,000.

▲ Wyoming—RURAL REDISTRIBUTION LINES—Lower Valley Power & Light, Inc., Freedom, 389 mi. rural distr. lines, 90 mi. transmission lines, sub-stations, generating facilities, communication equip., Lincoln Co. $2,700,000. CD 11/22/49.

Here's why GENUINE WROUGHT IRON



The Croton Aqueduct pipe line laying in 1860. This line, designed to carry water to the island of Manhattan, is made of ½-inch genuine wrought iron plate.



The Croton Aqueduct after more than 90 years of flawless service. A recent inspection of the line revealed that it was in excellent condition.

makes INSTALLATIONS LAST

Remarkable genuine wrought iron performance records similar to the Croton Aqueduct installation are recorded for a wide variety of services in practically every industry. The secret behind this material's ability to extend its "life-span" in corrosive services is illustrated in the notch-fracture test specimen pictured above.

This notch-fracture shows the unique fibrous structure of genuine wrought iron. Tiny threads of glass-like silicate slag, 200,000 to 250,000 per square inch of section, are distributed through the body of high-purity iron. These slag fibers are unaffected by corrosion, and set up mechanical barriers that halt and disperse corrosive attack, discourage pitting and rapid penetration. The fibers also anchor the initial protective scale, which shields the underlying metal.

Genuine wrought iron's service records from the past are providing an increasing number of the nation's leading engineers and designers with a reliable guide for material selection today. We will welcome the opportunity to review your corrosion problems with you —and to recommend the places where genuine wrought iron—on the basis of past experience—can be used to help cut maintenance costs.

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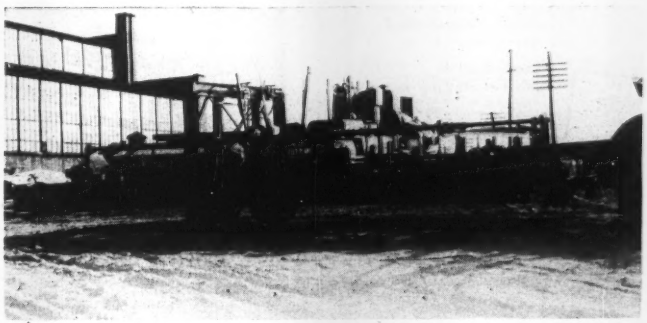
TraveLoader now attacks stockpiles as well as windrows

The Adams TraveLoader has been redesigned considerably so that it's now equally productive in stockpiles of gravel, crushed stone, sand, soil, coal or cinders as these pictures attest. Still usable for its primary purpose of reclaiming highway grades to restore proper drainage, it can also load snow, leaves, berm, etc. Rear section is adjustable from the cab to various heights to match trucks. Floating feeder, entire front of the loader and rear section of the conveyor can be raised or lowered hydraulically from cab by operator. Feeder, conveyor and travel movements are controlled by him also, through over-center-type clutches. Speeds range from low of 0.23 to high of 25.5 mph and an International industrial-type gas engine supplies power for feeder, conveyor and travel. Fenders and cab enclosure are optional. J. D. Adams Mfg. Co., Indianapolis, Ind.

Flex-Plane not only makes highways... It rides on them!



Usually when you see a finishing machine moving, it's riding rails or forms and pushing concrete or hot mix ahead of its screeds. The new Detroit finishing machine (above) moves another way as well. In a matter of seconds two pneumatic tires can be brought down from their nest in the machine frame and used to allow the rig to be towed behind a batch truck or any other vehicle. A hydraulic tongue lifter quickly spots the tongue onto a tow hook.

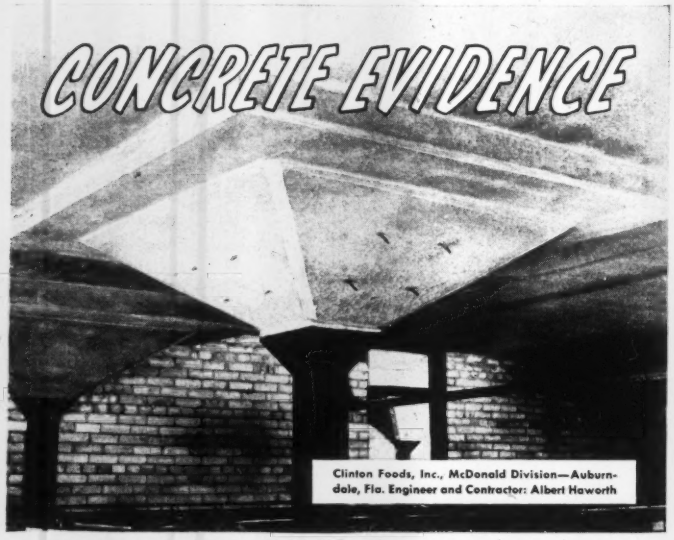
Many advances are incorporated into the new rig. Because city street paving calls for a variety of widths, the new Detroit Special was designed to be completely telescopic. Three basic machine sizes can finish widths from 10 to 27 ft. Both screeds are mounted outside the frame so that the machine can be set lower on the forms, providing greater rigidity and accessibility.

An offset screed attachment is provided for integral curb work, the attachment rough-forming curbing automatically. The screeds themselves have been improved to give an infinite range of adjustment which permits not only quick crown change, but also synchronization of the front and rear screeds, counter-synchronization, parallel stroking quarter parallel stroking, etc. wherever desirable. Flexible Road Joint Machine Co., Warren, Ohio.

Koehring hi-lift stripping shovel on Model 1005 base

Using the same base machine as the standard 2½-yd Model 1005, the Koehring hi-lift stripper here has a 50-ft boom and 36-ft dipper stick. With the boom angled at 45 deg, it has a 40-ft dumping height and a 60-ft reach. The manufacturer says that outstanding performance on casting operations has been reported when the unit was using both 2- and 2½-yd dippers, depending on conditions.

By comparison the standard 1005 shovel attachment, operated by chain crowd carries a 26-ft boom and standard 19½-ft double dipper sticks. It can be converted for lift-crane, dragline or clamshell operation. The standard 60-ft boom has a lifting capacity rated at 79½ tons, according to the company, and can be increased to 150 ft, including a 30-ft jib. Normally the stripper has 42-in. shoes and overall crawler dimensions of 13½ ft and 19 ft, 3 in. for width and length. These compare with standard 30- or 36-in.



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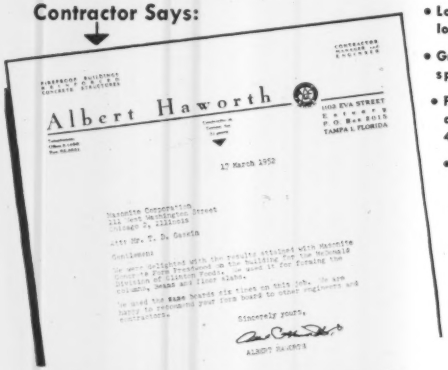

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17 March 1952

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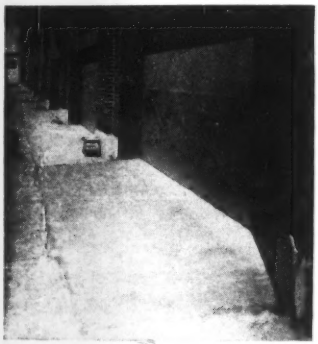

Tough feather edge on concrete patches

One of the bugaboos of concrete patching and build-ups is the inability of feathered edges to stand up under traffic. This almost always necessitates deep, butted edges and attendant additional time and effort. Now the manufacturer of a concrete patching material known as RUGGEDWEAR Resurfacer claims that his new product bonds tight and secure to old concrete without chipping, and will hold a feather edge as well.

Shown above is a typical installation made with the new surfacer. A ramp was installed — feathered on three sides—leading up to a new level at a factory unloading door. The maker also claims that it can be used as a complete overlay on almost any type floor. A ¼-in application is sufficient. FLEXROCK COMPANY, 3667 CUTHBERT STREET, PHILADELPHIA 4, PA.

PUBLICATIONS

Pump castings – Photographs, tables and charts illustrate this 20-page Bulletin No. 36 entitled "Meehanite Pump Casting." Photographs of the types of pumps that utilize Meehanite castings are supplemented by tables and charts illustrating property evaluations made from recent tests covering wear, resistance to acid corrosion and impact. MEEHANITE METAL CORP., PERSHING SQUARE BLDG., NEW ROCHELLE, N. Y.

Bin-dicators – Complete installation data for various types of bin level indicators used to determine level of granular and pulverized material stored in tanks, silos, hoppers and bins is provided in this 18-page catalog. Wiring diagrams are included for easy reference by installation and maintenance crews. THE BIN-DICATOR CO., 13946 KERCHEVAL AVE., DETROIT 16, MICH.

Westinghouse data book–Divided into four parts, this 330-page ring-bound book for architects and engineers contains specifications and descriptions as well as illustrations of the company's products. Each of the four groups—power plant, electrical distribution, utilization and accessory equipment and engineering data—is tabbed and has its own table of contents. WESTINGHOUSE ELECTRIC CORP., EAST PITTSBURGH, PA.

Menganal marketer–Special shape applicator bars for repair of tractors is the subject of Vol. 2, No. 11 of the Manganal Marketer. Included is a table listing lineal feet requirements for various types of tractors. The repairman can estimate how much of the grouser has been worn away and pick the size bar which will bring the grouser up to original size from actual-size diagrams listed in the Marketer. Complete details for welding on the bars are supplied. STULZ-SICKLES CO., 134-142 LAFAYETTE ST., NEWARK, N. J.

Cranes, Hoists–To acquaint industry with their complete line of equipment, American Hoist & Derrick Co. has published a 31-page catalog which covers all equipment from the giant revolver cranes through locomotive cranes, hoists, material elevators and car pullers down to wire rope clips. On-the-job pictures offer a guided tour of material handling installations throughout the world. AMERICAN HOIST & DERRICK CO., ST. PAUL, MINN.

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EDITORIALS

Airport hysteria

IRRATIONAL THINKING about the danger to people living near airports has reached high places in Washington. On one page of our June 19 issue we reported: (1) The Veterans' Administration has quietly directed its offices throughout the country to submit to Washington headquarters all loan appraisals on GI homes built within four miles of an airport; (2) Since last July, field offices of the Federal Housing Administration have generally refused to insure mortgages on homes within a four-mile radius of an airport, if they were beneath the normal take-off and landing paths; and (3) The Doolittle commission, in its report, recommended that local authorities, in planning new airports, should attempt to restrict all building within two and one-half miles of the ends of runways.

Anyone who has lived near an airport knows that the noise of planes flying low overhead can become a serious nuisance at times, but much the same can be said of living near a railroad or a busy main highway along which trucks roar both day and night. If a circle of four-mile radius is drawn around each airfield in any populous area in this country, it will be seen that very little of the area will be out of the zones now prescribed by the VA and FHA; yet those areas, generally, are where veterans and other young people most need aid in financing homes.

As was to be expected, the President's Airport Commission, which was headed by Lieut. Gen. James H. Doolittle, took a more rational approach to the airport-approach-area problem, but even its recommendations would appear to add so much to the cost of new airports as to be on the impractical side. It centers attention, however, on only "dominant runways," for which it would ban all building within an area 1,000 ft wide at the field and at least a half-mile deep. Beyond that, to a width of 6,000 ft at two miles, the commission says it would be desirable to protect by zoning both "the aircraft using the airport from obstruction to flight and people on the ground from hazard and noise."

The commission recognizes that outright purchase of land near the end of the runways may be necessary, also that owners in zoned areas may have to be compensated. The commission notes that the cost of doing this may be high.

The cost of easements of this character, when purchased by a public body, might well be close to the actual value of the land. Outright purchase of the land and its lease or resale with deed restrictions might be cheaper in the end. Use of the land for public golf courses or for market gardening might bring some return. Or if the land is needed for residential use, resale in large lots to limit the population density might be an answer. Building heights could be limited by deed restrictions.

Both the Veterans' Administration and the Federal Housing Administration should review their current restrictions on credit to owners or potential purchasers of homes near airports in the light of the Doolittle commission recommendations. There can be little justification for applying restrictions to all of a four-mile circular area around each airport, regardless of the airport's size or the position of its runways.

Air transport is here to stay. If it is not to be needlessly handicapped by restrictions that tend to depreciate property over a large area around each airport or by requirements that add greatly to the cost of airfields, less hysteria and more logical thinking is needed in high places in Washington.

Stirrings in engineering education

NOT FOR MANY YEARS has such active and conscientious thinking been focused on the needs and adequacies of engineering education as is the case today. It is one of the most encouraging signs of the wondrous times in which we live, for it would be all too easy to coast along in the success of past achievements. Avoiding this pitfall, engineering educators are raising their sights to new specifications for the products they turn out, seeking advice from engineering employers and turning the spotlight on their own teaching methods.

Nowhere has this been more apparent than at the annual meeting two weeks ago of the American Society for Engineering Education at Dartmouth College. Dean S. C. Hollister of Cornell and president of the society summed it up when he said, "It appears that a complete reorganization [of engineering education] must take place over the next few years if the engineering of the future is to be achieved at the level demanded by our economic system." And to give action to the thought, he established a committee under Prof. L. E. Grinter of Illinois Institute of Technology to stimulate a thorough review of engineering education procedures.

Somewhat similar soul-searching is going on among architectural educators who sense a need for less-cloistered thinking and more contact with engineering and building problems on the part of the architect of the future. Even outside academic halls the subject is a live one, as evidenced by the recommendation of Tyler S. Rogers of Owens-Corning Fiberglas Corp. (ENR July 10, p. 32) that the teaching of engineering and architecture, and of the methods and business of construction be merged in single schools of the "construction arts and sciences."

All of this affords a beneficial atmosphere for the operation of Prof. Grinter's committee. In stimulating widespread examination of engineering educational procedures, it may also be able to promote some interesting new experiments. That would make its significant operations even more worthwhile.

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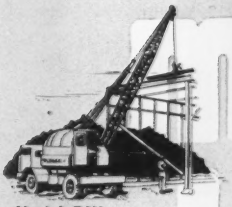

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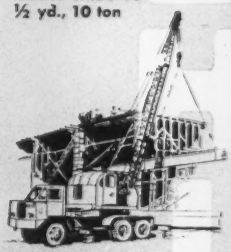

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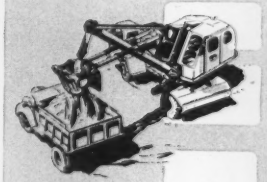

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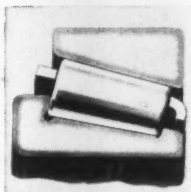

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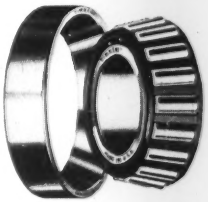

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